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COMPLETION REPORT

MARYLAND'S
PLANNING PROGRAM FOR FLOOD RECOVERY, REHABILITATION AND PREVENTION

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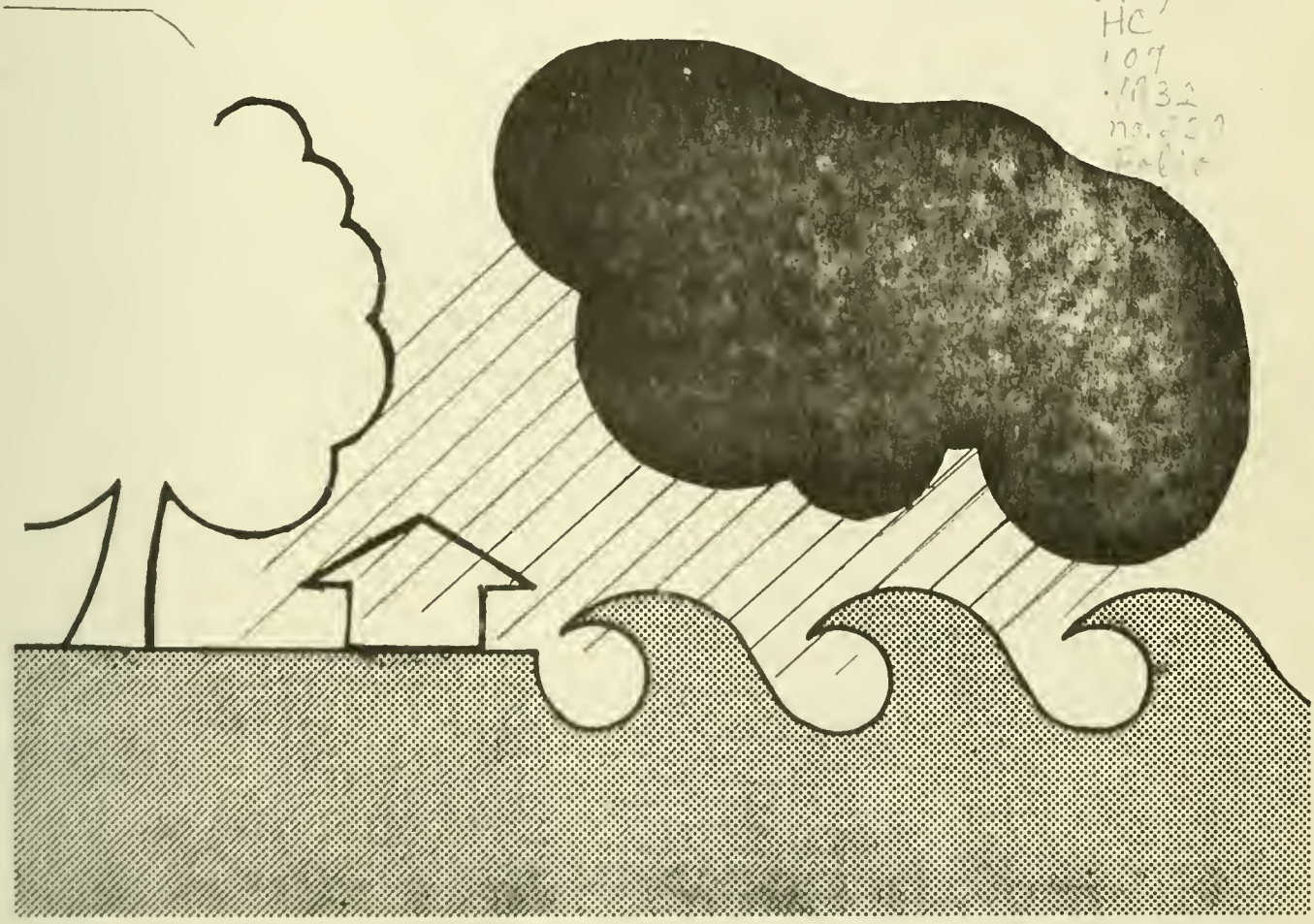

MARYLAND DEPARTMENT OF STATE PLANNING

DECEMBER 1975

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Flood Disaster Coordination Office

The preparation of this report was financed in part through a comprehensive planning grant from the Department of Housing and Urban Development; the Economic Development Administration, U.S. Department of Commerce; and the Appalachian Regional Commission as part of the President's Disaster Relief Program following Tropical Storm Agnes, June 1972.

Maryland Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

Publication No. 250 December 1975

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December 1975

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INTRODUCTION

On October 13, 1972, four months after Maryland was ravaged by Hurricane Agnes, the State submitted an Overall Program Design (OPD) for Flood Recovery, Rehabilitation and Prevention to the Federal Regional Council requesting in excess of 3 million dollars. This OPD was based upon a survey of the State's long-range flood recovery planning needs. Activities for which funding was requested included delineation of floodplains, stormwater management, relocation of flood-prone uses, channel improvements, evaluating impact of watershed development on frequency of flooding, shore erosion control, review and enactment of more restrictive regulatory land use controls, flood emergency response, preparation of design criteria for flood and stormwater control structures, rehabilitation of damaged structures, economic redevelopment, unemployment and relocation problems related to flood damage.

In March 1973, the Federal Regional Council approved an abbreviated $\frac{1}{2}$ million dollar program or about 15% of that requested. Since the execution of the program in the summer of 1973, changes occurred as a result of local and State grantees reallocating funds to better reflect their flood recovery planning needs which became clearer as the program got underway. In June 1974, a Final Overall Program Design was published which represents the programs as it was finally completed in December 1975. All of the activities noted above have received attention directly or indirectly through the work of the Flood Disaster Coordination Office (FDCO) from its initiation in September 1972 till December 1975.

The following Budget Summary shows which agencies funded the project as well as those agencies that received funds over the term of the project.

BUDGET SUMMARY

March 1973 - December 1975

RECIPIENT OF FUNDING	SOURCE OF FUNDING: ARC APPALACHIAN REGIONAL COMMISSION	HUD DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT	EDA ECONOMIC DEVELOPMENT ADMINISTRATION	TOTALS
Tri-County Council for Western Maryland	$28,000			$ 28,000
Md. Dept. of Natural Resources	10,000	$ 20,000	$ 30,000	60,000
Md. Dept. of State Planning	2,000		11,000	13,000
Baltimore City		10,000	45,000	55,000
Baltimore County		25,000		25,000
Cecil County		30,000		30,000
Howard County		21,000		21,000
Md. National Capital Park and Planning Commission		7,000		7,000
Md. Dept. of Economic and Community Development			118,000	118,000
Susquehanna River Basin Commission			6,000	6,000
Subtotals	$40,000	$113,000	$210,000	$363,000
Flood Disaster Coordination Office	10,000	87,000	40,000	137,000
TOTALS	$50,000	$200,000	$250,000	$500,000

The Completion Report on Maryland's Planning Program for Flood Recovery, Rehabilitation and Prevention, summarizes the accomplishments of the individual work programs, of each participating jurisdiction, as presented in the Final Overall Program Design.

The body of the report is divided into three major sections. The first section consists of a brief program summary. The role of the FDCO is discussed along with the accomplishments of the various programs and activities funded. The individual program completion reports make up the second section of the report. Nearly a dozen programs are described in some detail. A listing of reports and papers funded by Maryland's Hurricane Agnes Recovery Grant. They are listed by the State agency or sub-state jurisdiction responsible for preparing each report.

Program Summary

"The psychological impact and mental stress that was brought to bear upon flood victims cannot be overlooked. Flooding made them homeless and caused loss of personal and real properties which may never be replaced. This unmeasurable loss cannot be restored in terms of value it represented to their personal lives. It is to the further prevention of this type of tragedy that we must look to protect the well-being of the citizens of Maryland."

From Overall Program Design For Flood Recovery, Rehabilitation and Prevention, Oct. 13, 1972, Maryland Department of State Planning

Program Summary

Conducted as a singular program within the State, the program was funded at the Federal level through a one-half million dollar allocation to the State by the Department of Housing and Urban Development, the Economic Development Administration under the Department of Commerce and the Appalachian Regional Commission. This money was used to fund long-range flood prevention planning activities.

Damage to real and personal property continues to rise even though government has recognized and identified the causes. The enactment and enforcement of more stringent regulations is, however, only a partial solution to problems of flooding and related damage from uncontrolled drainage. Past management activities have clearly shown that the movement of water within watersheds cannot be properly managed by regulations alone. We must identify and begin to understand the hydrologic and hydraulic character of our watershed as near

as possible. Technical ability exists to do this by determining those physical changes which overload the capacity of watersheds in light of man's encroachment into natural drainage channels. Unfortunately, the lower flood-prone areas of most of the State's watersheds have been developed to such a degree that flood management may have to be more restrictive upstream than downstream. Property downstream can be protected by floodproofing, relocation of uses out of the floodplain, and the construction of levees. All are expensive. Less expensive is the construction of flood preventive devices upstream such as reservoirs or retention basins together with careful land use decisions so that changes in use will not cause runoff in excess of that before the change in use.

The stormwater design manual prepared by the Department of Natural Resources stresses the need for understanding relationships between changes in land use and flooding. The design of stormwater conveyance systems is complex and requires a determination as to what protection is required for a given site. Who is responsible for insuring that this protection includes the necessary devices to restrict flooding downstream? All of the studies strongly recommend that each new use of land recognize the flood potential from upstream uses and incorporate adequate storm drainage and flood protection to minimize flooding onsite and downstream.

Studies conducted by Baltimore City, Baltimore County, the Maryland-National Capital Park and Planning Commission and the Department of Natural Resources acknowledge that adequate flood or watershed management cannot take place in urbanizing watersheds unless activities are closely and continuously monitored with allocation of specific drainage rights to land users. Basically this means that excess runoff must be stored onsite and released at a later time when the high volume storm runoff has ceased.

In areas of the State where ultimate development conditions exist, it is recommended that procedures be developed to involve citizens in management activities. Flooding conditions are more frequent in urban areas and such things as clearing clogged drains of newspapers can significantly reduce property damage. How many citizens are aware of this single flood prevention technique? Baltimore City is beginning to involve citizens in stormwater management and recommends this procedure for other urban areas. The City also recommends the purchase of all vacant land in flood-prone areas as permanent open space.

The Howard County Study recommended the selective clearing of brush and trees from flood-prone areas and floodproofing of all houses within the 100-year floodplain. It suggested that the County purchase property where floodproofing costs are too expensive. As a result of this study, the County set up a revolving low interest loan fund to aid property owners in floodproofing. Borrowers are required to purchase federally subsidized flood insurance.

Funds were used to fund a joint management study of the Jones Falls Watershed. Baltimore City and County, the Jones Falls Industrial Association and the Department of State Planning participated in the Study of this urbanized watershed. The major findings of the study was that a formal arrangement in the form of a separate administrative authority is essential for effective watershed management where the watershed is located in more than one political subdivision. The following recommendations were made to insure adequate safety from flooding: periodic stream maintenance, preservation of natural floodplains as open space, restrict building in the 100-year floodplain,

relocation of industrial uses located in the floodplain, and joint reviews and control of land use and policy decisions which would increase flood hazards.

A review of the powers of the Department of Natural Resources revealed that many activities which violate State law go undetected due to the lack of effective surveillance. Local cooperation by subdivisions was reported as almost non-existent. Department regulations were described as vague. Methods for computing stormwater runoff and the design of conveyance structures acceptable to the Department lacked guidelines to aid in procuring Departmental approval. Standards for complying with laws and regulations lack clarity and uniformity. Recommendations were made for developing flood emergency procedures. It was specifically recommended that the Department implement a permit procedure for reuse of flood damaged structures and periodically inspect flood control structures both before and during flood occurrences. The Department of Economic and Community Development has adopted a policy whereby economic development planning at the State or local level will promote disaster recovery and mitigation. In other words, economic development will be directed away from flood-prone land where industries and employees are out of the path of flooding.

Flood Disaster Coordination Office

This office (FDCO) was established within the Department of State Planning to coordinate the long-range flood prevention planning activities. FDCO was instrumental in obtaining an additional $160,000 for the Department of Human Resources to prepare a disaster response plan and for hiring unemployed

waterman to do flood related studies in coordination with the Department of Natural Resources and Health and Mental Hygiene. This resulted in the preparation of individual assistance procedures for use in State emergencies to minimize hardship and suffering caused by inadequate food, housing, money and unemployment. FDCO worked with the Civil Defense and Emergency Planning Agency in preparing the Maryland Disaster Assistance Plan. An FDCO report Regulating Flood-Prone Land In Maryland was utilized by that Agency as affirmative proof of the State's concern for comprehensive disaster preparedness. A paper prepared by FDCO which reviewed the adequacy of flood related regulatory measures in the Jones Falls Watershed resulted in a joint management study by Baltimore City, Baltimore County, the Jones Falls Valley Industrial Association and the Department of State Planning. FDCO has served as a central coordinating office redirecting local government and citizen requests for information and assistance. Much time was spent in assisting local governments in complying with the Federal Flood Insurance Program.

The FDCO published seven newsletters between 1973 and 1975 to all local subdivisions and Federal and State agencies. The Newsletter kept readers informed of the status of flood-related program activities, Federal and State legislation having an impact on flood prevention, the Federal Flood Insurance Program and related matters.

FDCO has published two reports: Summary of Flood Related Studies in Maryland and Regulating Flood-Prone Land in Maryland. The Summary was published in July, 1973 and updated and republished in June, 1974. It describes

floodplain and stormwater management activities of Federal and State agencies. The report also discusses the impact of the Flood Disaster Protection Act of 1973 on State and local governments and individuals. The status of all major studies and investigations of flooding problems is presented. Regulating Flood-Prone Land in Maryland reviews the floodplain and stormwater management programs in Baltimore City and the twenty-three counties of Maryland. Program information was gathered from personal interviews, related correspondence and research. Management practices center on zoning, subdivision regulations and building codes. The report ends with a discussion of judicial reaction to floodplain and stormwater management practices.

The Office in cooperation with the Department of Natural Resources recently completed a study of flood control and floodplain management activities within the State for a report to the Maryland General Assembly. FDCO staff has worked closely with elected officials particularly the House Environmental Matters Committee in providing information and drafting legislation.

Funded Activities

Programs or activities funded by the one-half million dollar Federal grant produced numerous beneficial results. Baltimore City made an inventory and analysis of flooding problems in the Gwynns and Jones Falls and Herring Run. All city-owned facilities within the 100-year floodplain were identified. Guidelines were developed for on-site run-off management and for sediment and erosion control. Flood protection and prevention policies for critical areas were developed. The City participated with Baltimore County in a joint study of the Jones Falls watershed. The study resulted in an assessment of flood

control needs with applicability to the Gwynns Falls and Herring Run watersheds common to both of these jurisdictions. The study proposes joint management mechanisms and comprehensive planning methods to adequately control flooding in the Jones Falls and other interjurisdictional watershed management situations. Baltimore County participated in the joint Jones Falls watershed management study. The County made an inventory of existing and future residential, industrial and commercial development identification; stormwater control, collection, and conveyance systems; soils characteristization; and major drainage area delineation.

Cecil County conducted a study of the Town of Port Deposit which lies largely in the floodplain between the Susquehanna River and steep cliffs rising as much as two hundred feet. The study identified physical and economic problems and recommended floodplain and stormwater management procedures, development strategies and growth alternatives. A significant finding was that the Town's development potential will largely depend on the future use of the Bainbridge Naval Training Center. The study stated that Port Deposit is best suited to become an historic village and recreational area.

Extensive flooding of the communities of Allview Estates and Elkridge in Howard County during Tropical Storm Agnes in 1972 generated an awareness among the residents and county officials of the probable effect of continued development of the upstream watersheds increasing flood damage and related hazards from storms of lesser intensity but greater frequency. Howard County was given funds to evaluate the predicted rate of development and resultant level of flooding due to the 100-year frequency interval storm at several

intervals of time and to develop alternative measures for eliminating damage. Alternatives were evaluated in conjunction with flood prevention measures planned by the Soil Conservation Service and the Corps of Engineers. As a result of this study, the County initiated a County-wide revolving fund to finance floodproofing for habitable dwellings within areas subject to flooding. The project makes available to individual property owners as much as $6,000 in loan funds amortized over a twenty-year period. The concept was a recommendation of this study and should be considered by other local jurisdictions and the State as an alternative means of preventing flood damage.

The Tri-County Council for Western Maryland, Inc. was given funds to hire a flood management coordinator. The coordinator has been successful in assisting local subdivisions in Garrett, Allegany, and Washington Counties in complying with the Federal Flood Insurance Program. Twenty-six of the twenty-seven local jurisdictions are in compliance with this program. The coordinator has provided additional assistance to counties and towns in delineating floodplains, conducting studies of stormwater problems and providing general civil engineering expertise, not previously available.

The Department of Economic and Community Development received the largest amount of grant funds, one hundred and eighteen thousand dollars to assist those jurisdictions within the State which suffered job and income losses from Hurricane Agnes with special emphasis upon helping these jurisdictions to develop long-range economic programs which will yield job and income producing enterprises with a high degree of viability under future natural disasters. Four economic development specialists were supported by this program to provide liaison with and assistance to local jurisdictions. One field person

worked on the Eastern Shore, particularly with the Delmarva Advisory Council. Another worked with the Tri-County Council for Southern Maryland. The third worked in the Baltimore-Washington Corridor area and the fourth worked in Western Maryland. This program allowed the Department of Economic and Community Development to begin a development planning process Statewide with a field force as well as a research/planning unit. Throughout the State, the activities of the field representatives have tended to nudge local planners and economic developers closer together and to increase their awareness of their interdependencies and mutualities of interest.

The Department of Natural Resources received funds which resulted in a manual of procedures and guidelines for stormwater management; an evaluation of the effectiveness of regulations concerned with surface water management; and an outline of flood emergency response activities. The preparation of the manual was done with the advice and assistance of a Statewide advisory task force including developers, consulting engineers and local government engineers. The manual, the major funded activity, represents a "shorthand description" of the programs, techniques and design procedures necessary to prevent violent streambank erosion that usually follows development. Prevention of streambank erosion is the primary objective of the manual but the methods described also apply with equal weight to other resources management objectives particularly the reduction of peak stormwater flows.

The Susquehanna River Basin Commission under contract with the Federal Flood Insurance Administration delineated floodplains in the Susquehanna River Basin including the towns of Havre de Grace, Perryville, and Port Deposit.

The Agnes Recovery Program funded delineations for that area of the river from Conowingo Dam to Port Deposit including the lower portion of Octoraro Creek in Cecil County. Resultant maps were given to the subdivisions effected.

As a result of financial assistance provided to the Comprehensive Planning Division of the Department of State Planning, a series of 23 county soil maps were prepared. These maps combine the 300 soil types recognized by the U. S. Soil Conservation Service into 30 generalized units. The classification system makes it possible to map selected characteristics which include alluvial soils, runoff and erosion potential, fertility, stability and depth to bedrock. The usefulness of these maps is not limited by the basic data inputs obtained from the SCS Soil Surveys, which are perhaps the most consistent high quality data sources that are widely available today. This process can be repeated either regionally or at a Statewide level wherever sufficient soils survey coverage is available. The general pattern and extent of flood-prone land can be assessed using these maps.

As stated previously, most of the activities for which funding was requested received attention. Perhaps a better statement of the purpose of the long-range flood recovery program funded by the half-million federal grant was to provide an awareness of necessary planning and managment resources and give at least preliminary direction to local governments to enable them to identify and understand areas of vulnerability from flooding and to adopt the necessary regulatory or administrative procedures for reducing disaster impact. This was accomplished by the Flood Disaster Coordination Office.

BALTIMORE CITY

CITY OF BALTIMORE

WILLIAM DONALD SCHAEFER, Mayor

PLANNING COMMISSION
DEPARTMENT OF PLANNING
LARRY REICH, Director
8th Floor, 222 East Saratoga Street, Baltimore, Maryland 21202

September 24, 1975

DEPT. OF STATE PLAN
RECEIVED
OCT 3 1975
REVIEWED
ANSWERED

Mr. Donald Brand
State Planning
Flood Disaster Coordination Office
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301 West Preston Street
Baltimore, Maryland 21201

DEPARTMENT OF PLANNING, BALTIMORE CITY, PROGRESS REPORT ON THE COMPLETED SCOPE OF SERVICES FOR THE JONES FALLS JOINT STUDY

The following summary of the scope of services for the Jones Falls Joint Study indicates the completed status of the work program by the Department of Planning, Baltimore City. The Flood Disaster Coordination Office has received the substantial portion of the work program under the cover letter dated September 9, 1975. The Department of Planning retains several lists indicated in the scope of services, which due to the bulk of material remain in a hand-written format. These include assessed value of all properties located within the 'high hazard' flood areas as delineated by the Federal Insurance Administration and all damage reports compiled by the City. Enclosed with this letter is segment, II, B5, indentifying land management, fiscal and administrative issues and problems, and segment C., Preliminary Flood Plain and Storm Water Management Guide Lines, items 1-6.

If there are further questions concerning the Department of Planning's participation in the Jones Falls Joint Study, please contact David Carroll at 396-4310.

LARRY REICH
DIRECTOR

dg

Sheldon Lynn, Asst. Director - Department of Planning
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Enclosure

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A. Inventory and Analysis: Conditions and Flooding in the Gwynns Falls, Herring Run and localized watersheds.

B. City-owned Facilities in the 100-Year Floodplain

C. Current Activities

   a) Flood Alert System Team
   b) Corps of Engineers-Metropolitan Flood Problem Identification Report
   c) Baltimore City, Flood Insurance Program
   d) Baltimore City/Baltimore County/Department of Natural Resources Joint Work Program
   e) Soil Conservation District Research

D. Identification of land management, fiscal and administrative issues and problems.

E. Guidelines for on-site run-off management
   Guidelines for sediment and erosion control

F. Flood prevention and protection policy measures in critical areas.

G. Floodplain-stormwater management regulations.

H. Identification of major and minor project study areas for flood control, sediment and erosion control in both the watersheds.

I. In coordination with Baltimore County, an impact analysis of County growth on Gwynns Falls and Herring Run and identify areas where County regulations will have to be upgraded for effective management of the watersheds.

A. Inventory and Analysis

1. Gwynns Falls

a) The Gwynns Falls watershed encompasses approximately sixty-three (63) square miles, nineteen and one-half (19.5) which are within the City of Baltimore. A large portion of the stream runs through parkland with a minimal amount of residential development adjacent to the floodplain. Only in Baltimore County, in the sub-watershed of Maidens Choice Run, Dickeyville and Maisel Street, have residential developments taken place. This lack of development has resulted in the City, from the adverse topographic characteristics along the stream which runs through narrow valleys with steep walls, precluding development of the floodplain. The lower end of the Gwynns Falls has been heavily developed by industrial users. A portion of this area, adjacent to the Middle Branch, has been filled over the past one-hundred and seventy years and is now only six to ten feet (6' to 10') above mean low tide. This has resulted in poor drainage in sump areas, overbank flooding, sheet flow, and tidal inundation of buildings, storage yards and roadways.

Running the length of the Gwynns Falls from the western City line to Russel Street, and along Maidens Choice and Dean Run are major sanitary sewer interceptors. Due to severe erosion large portions of the older sanitary sewer system have been exposed to flood damage. There are also privately owned facilities located adjacent to the stream which include electrical lines, gas service pipes, and railroad tracks.

b) Middle Branch to B & O Railroad Bridge

This area is a complex mixture of overbank flooding, low sump areas and tidal inundation, aggravated by numerous stream obstructions. Much of the past flooding has been caused by debris jammed at both the Annapolis Road bridge and the B & O bridge pushing water into industrial areas removed from the stream. These areas have experienced water one to three feet deep and deposits of silt. In addition to the Gwynns Falls drainage through the area, there are major outfalls located at Bush Street and Alluvion Street which make removal of large quantities of water even more difficult.

Alterations have been planned to improve portions of various systems. Chatsworth Run will receive a parellel line with a new outfall at Alluvion Street. The Annapolis Road Bridge

and the physiographic characteristics become that of narrow valley floors, steep slopes, largely forested, topped by densely urbanized plateaus.

f) Wilkens Avenue to Windsor Mill Road Bridge

Much of this area lies within the ownership of the Department of Recreation and Parks. Right of way along the stream is also utilized by major sanitary sewer interceptors, track for the Western Maryland Railroad and Ellicott Driveway. All of these uses received extensive damage from "Agnes" and flash storms. The Western Maryland Railroad and interceptors have been repaired and to some degree protected. Portions of Ellicott Driveway remain closed and erosion still presents a problem for all of these physical developments. The bridge at the intersection of Wetheredsville and Franklintown Road was damaged. This general area also suffered from severe erosion with a portion of Wetheredsville Road remaining closed as work continues to protect sanitary sewers. Large numbers of mature trees were washed out of the floodplain and added to the debris problem.

g) Windsor Mill Road Bridge to City Line

Although much of the stream is contained within the park system the residential area of Dickeyville received damage. This was restricted to several homes, washed out driveways and yards and the mill pond dam was destroyed. There was also damage to the then vacant Dickey Mills and the entrance bridge was washed out. Erosion along streambanks has exposed sanitary sewer interceptors and removed considerable bank material. This also resulted in a number of mature trees falling into the stream and being carried along by floodwaters to damage bridges, sanitary sewers, etc. Portions of Wetheredsville Road have been undermined and required repair.

Dead Run

h) Wetheredsville Road Bridge to City Line

Damage along this portion has occurred to recreational areas, Franklintown Road, and the stream bank. There are several cases of the stream changing course, especially during storm flows and moving through wooded areas adjacent to the roadway. Erosion has also caused problems to the streambank in the residential and commercial area although there was not any extensive water damage.

Maidens Choice Run

i) Confluence with Gwynns Falls to City Line

Maidens Choice Run has received severe erosion damage along its entire length, although this has been most pronounced in

has been raised and the number of piers reduced to accommodate greater flows. Other projects completed or under construction have as yet, an undetermined impact on the functions of the stream and floodflows.

c) East of Washington Blvd. Bridge to B & O Railroad Bridge

Considerable flooding during "Agnes" occurred on the south side and several small industries were inundated with up to eight feet (8') of water. Many of these buildings are located directly on the streambank and erosion is an associated problem. The severity of this flooding has been tied to the backwater effect of the bridge and will probably remain a problem until this condition is corrected.

d) Washington Boulevard Bridge area - Maisel St. and Carroll Park

This isolated residential area was severely flooded during "Agnes". (As many as fifty residential and commercial structures received water and silt damage.) Located in a hollow and adjacent to the stream it is likely that flooding will continue to be a problem in major storms. This area is included in the Baker-Wibbely Report on the effect of the interstate construction on flood flows in the Gwynns Falls. One of the recommendations from this report was to raise the Washington Boulevard to increase the flow capacity of the opening and remove the roadway from flooding. This was not to have any negative effect on water levels in the residential area. Carroll Park Golf Course experiences some flooding. It is in this general area that the Interstate construction will relocate the stream and provide a more controlled floodplain situation. There has been a good deal of streambank erosion and generation of debris from overbank flow in the un-maintained floodplains.

e) Wilkens Avenue Area - Confluence of Maidens Choice Run

Adjacent to and below the confluence of Maidens Choice Run severe erosion has occurred in the streambank which reaches an elevation of approximately forty feet (40') above the bed of the Gwynns Falls. Several industries located at the edge of the bank are in danger of losing additonal property and eventually sturctures if the condition persists. Immediately south of the Wilkens Avenue Bridge are several warehouses which are located in the floodplain and received extensive damage in the 1972 storm.

These are proposed to be taken by Interstate construction. It is in this general area, between Carroll Park and Wilkens Avenue that the Gwynns Falls begins its cut into the Fall Line

the vicinity of Wilkens Avenue. It undermined from the erosion and the culvert collapsed into the stream. This caused ersosion damage to other commercial users. Extensive water damage occurred in the 4700-5000 blocks of Frederick Road and along Beechfield and Tremont. Much of this flooding is due to a portion of the stream being placed in a pipe which is now inadequate to carry storm flows. There was also damage to other residences along the submerged portion of the stream where water backed-up through storm inlets to cause flooding.

2. Herring Run

a) City Line to Sinclair Lane

This section of Herring Run passes through a complete range of uses. Some residential with large sections of industrial and commercial and portions of parkland. Considerable flooding has occurred south of Route 40 (Pulaski Highway) within the industrial and warehousing development. There has also been considerable erosion of the streambed and banks.

Within the park there has been substantial erosion, damage to sanitary sewer interceptors and damage to other utilities. Although additional development has taken place, it has been guided out of the flood plain and consistent with erosion control.

b) Sinclair Lane to City Line

Almost this entire section runs through some form of municipally owned land. The condition of the water course and floodplain has been documented in the report "A Plan for Improvement and Conservation, Herring Run Stream Valley" by the Mayor's Advisory Committee on Herring Run. The plan notes that the major problem is a result of erosion to streambanks, damage to utilities, including bridges and flooding of recreational facilities. Measures to correct or control these problems have been the concern of an ongoing task force of the Committee, Department of Planning, Department of Public Works, and State Department of Natural Resources.

3. Scattered Sites

a) Moores Run

Although much of this stream is in vacant land or proposed parkland, there has been damage to homes, roadways and several bridges. The areas in the vicinity of Walther Avenue, Glenmore, and Parkmont Avenue received considerable damage in the 1971

storm. Much of this has been attributed to inadequate storm inlets, culverts, and bridge openings. There are numerous instances where tributaries have been covered and result in localized flooding.

b) Biddison Run

This stream is typical of systems which are both partially covered and left open. The covered portion has occurred in the upper watershed and has resulted in flooding north and south of Belair Road at Parkwood Avenue. Alternate methods of correcting this situation are now under study. The open portion of the stream suffers from bank erosion and occasional flooding in isolated sections. Inadequate capacity and steep grades have combined velocities generated in the upper watershed which results in flooding and erosion.

c) Lakewood Avenue/Streeper Street

This is a totally "urbanized" watershed running from North Avenue through Patterson Park to the Harbor. Once a natural stream the culverts now carrying flows are undersized with an inadequate number of inlets. This problem has been compounded by the creation of several natural sump areas north of Patterson Park. The combination of long, steep grades, inadequate inlets, pipe capacity and sumps creates the potential for flooding whenever a heavy rainfall occurs. A major project is now in the design stages to correct the problem situation.

d) Tiffany Run - 35th St. and Hillen Road

Flooding has occurred numerous times in a sump area along 35th Street between Hillen Road and the Alameda. Apparently this is a problem of undersized pipes and inlets combined with a low grade in the sump. A consultants study will cover the alternative methods of handling the problem. Damage has been largely confined to automobiles, lawns and wet basements.

e) Kirk Avenue

Flooding in the Kirk Avenue area, once drained by Jenkins Run, has been sporatic. Damage reports have been received from homeowners and flooded intersections have resulted in property destruction to automobiles. Relief drains have been proposed, combined with additional inlets to lessen the problem and handle the overland flow.

f) Other localized sites

There are many small localized areas of flooding which have been mapped yet not individually described. Flooding occurs in these areas as a result of common adverse situations. Often the actual pipe capacity is not adequate to handle even a five year storm. This combined with insufficient inlets, debris, and the special conditions of steep slopes, long grades and sump areas create the potential for frequent flooding. These have been indicated on the map as dark areas generally at intersections of streets.

B. CITY-OWNED FACILITIES IN 100 YEAR FLOODPLAIN

This is a preliminary list of facilities, basically buildings and bridges, which are owned by the City and are within the 100 year floodplain "high hazard" areas, as computed by the Corps of Engineers for the Flood Insurance Administration. There is also considerable flood plain land within the City's park system. Much of this is damaged by storms and requires funds from Recreation and Parks for repairs. Also running along most streams is a considerable network of sanitary sewer lines, manholes, junction boxes etc. These have received considerable damage from both major storms and lesser events.

This list includes all structures found within the 100 year floodplain based on available information. Additional information, especially on the lower Jones Falls Section and the harbor, will possibly increase the number of facilities. There also are City buildings which may encounter flooding, but only as a result of isolated drainage problems and are not included in the "high hazard" area designation.

a. Western Run

1. Clarks Lane Bridge
2. Bancroft Road Bridge
3. Strathmore Road Bridge
4. P.S. 247
5. Taney Road
6. Firehouse at Cross Country Boulevard/Glen Avenue #45
7. Pimilico Road Bridge
8. Bonnie View Drive Bridge
9. Lochlea Road Bridge
10. Greely Avenue Bridge
11. Newbury Street Bridge

b. Jones Falls

1. Lake Roland Dam
2. Cottonworth Avenue Bridge
3. Smith Avenue Bridge
4. Various portions of Jones Falls Expressway
   a) Northern Parkway to Cold Spring Lane (N.B. ramp)
   b) section north and south of 41st Street Viaduct
5. Jones Falls Pumping Station (Ash Street and Clipper Mill Road)
6. Falls Road yard
7. Area south of conduits to harbor not determined.

c. Gwynns Falls

1. Washington Blvd. Bridge (being raised by Interstate Construction)
2. Annapolis Road Bridge
3. Monroe Street Bridge
4. Sanitation Department Storage yard at Russell Street

d. Maidens Choice Run

1. School 246

e. Chinquapin Run

1. Belvedere Avenue Bridge
2. The Alameda Bridge
3. Woodbourne Avenue Bridge

f. Herring Run

1. Perring Parkway north of Woodbourne Avenue
2. Woodbourne Avenue (replacement under construction)
3. Belair Road Bridge
4. Manasota Avenue Bridge
5. Brehems Lane Bridge
6. Pumping station at Shannon Drive & Lyndale Avenue
7. Sinclair Lane Bridge
8. Bowley's Lane Landfill (fill area only)
9. U.S. Rt. 40
10. School #231 (Manasota & Brehms Lane) partial

g. Harbor

1. Small portions of Patapsco Treatment Plant (all new construction has been raised above 100 year flood level
2. Recreation Pier at foot of Broadway
3. Public open space, walkways adjacent to Inner Harbor Basin
4. Bridge section yard (Lancaster Street)
5. Fireboat station at Fort McHenry
6. Fireboat at Pier 3
7. Portions of Key Highway Repair Shop and Police Marine Unit
8. Potee Street Bridges

h. Moores Run

1. School #210 (Newholme & Hazelwood) partial

D. Identify land management, fiscal and administrative issues and problems.

Comprehensive watershed management requires that land use decisions recognize the impact of development on the hydrolic functions of a water system. There are limited examples of this comprehensive approach to zoning and/or land use controls. Both jurisdictions and the State have few effective methods to insure proper land use within watersheds other than specific controls on local drainage or uses within a floodway or floodplain area. Even these tools are minimal and fragmented and, until recently, have received little attention. With the completion of the Jones Falls Joint Study, the Flood Insurance Program, proposed State Legislation and the newly initiated inter-jurisdiction task force adequate processes should develop to generate a comprehensive storm water management program, or programs, which will give due consideration to land management issues.

Fiscal and administrative problems are areas which have been addressed in the recommendations of the Jones Falls Joint Study and several pieces of draft legislation. Currently all expenditures on storm water or erosion control projects are incorporated into the Capital Development Program. The total expenditure required to eleviate existing critical flooding of localized situations is beyond what Baltimore City or Baltimore County can currently accommodate. Careful fiscal programming has been utilized to provide responsible funding of local storm water projects. These issues will require a number of years to implement and utilize a substantial portion of monies allocated to storm water. Major storm water control projects are apparently beyond the fiscal ability of either jurisdiction and there is substantial evidence that projects on the scale of watershed/floodplain management and control will require combined efforts of Federal, State, and local funding. This issue has surfaced in numerous meetings with the Corps of Engineers, the State legislature and with local private groups interested in flood control.

E. Guidelines for on-site run-off management
Guidelines for sediment and erosion control

On-site run-off management investigation and sediment and erosion control method improvements are continuing through various programs. Several of the larger development projects within Baltimore City have been required to provide on-site retention. This has resulted from the Department of Planning and the Department of Public Works meeting with the developer and project engineers to determine the capacity of existing storm drain systems and the retention requirements of the development. Examples of this are Benhurst Park, Roland Springs, Parkside Shopping Center, and the proposed Cold Spring New Town. On site retention has also been requested of several smaller developments.

The City, as a participant in the State's sediment and erosion control program has an established review, permit, and enforcement procedure. Grading and building permits are submitted to the City which routes them through various agencies, including the Department of Planning and Public Works. In both

C. Current Activities *

a) Flood Alert System Team - information enclosed

b) Corps of Engineers, Metropolitan Flood Problem Indentification Report - Available from the Corps of Engineers.

c) Baltimore City, Flood Insurance Program - covered in report, additional information available by request

d) Baltimore City/Baltimore County/Department of Natural Resources, Joint Work Program - proposals enclosed

* See pages 26 to 29 for amplification.

departments, plans are checked for storm drain adequacy, erosion and sediment control, and the relationship of the development to the designated high hazard flood areas. The Department of Public Works is responsible for releasing the plan for permit approval. The Department of Housing and Community Development, through its inspection division is responsible for on-site compliance with the erosion and sediment control plan. Inspection of numerous projects is assisted by community groups which usually follow development throughout the planning and implementation stages. Evaluation of the review and inspection segments of this project continue within the Departments of Planning, Public Works, and Housing and Community Development.

F. Flood prevention and protection policy measures in critical areas.

Development within critical flood areas has generally been minimized within Baltimore City. Although considerable industrial use occupies much of the Jones Falls Floodplain, Herring Run and Gwynns Falls have limited existing development, with the vast majority of the land in public park lands. This policy of appropriate uses for flood prone areas has been expanded with the inclusion of vacant land along Moore's Run into the City park system and the planned open space system in Coldspring New Town. Considerable acquisition on the lower Gwynns Falls, from Wilkens Avenue to the Middle Branch has been a part of the Interstate construction program. This includes re-alignment of the stream into the proper meander pattern and improvements in the functions of the floodplain through reconstruction.

Areas of localized, critical flooding are under continuing study to evaluate the appropriate methods to handle storm flows. These areas have been shown on the local flooding area map and are included in the text. The Lakewood-Streeper area is now an active project with a budgeted expenditure of approximately fifteen (15) million dollars. Over twenty alternative plans were tested with the engineers, the neighborhood, the Department of Public Works, and the Department of Planning. Tiffany Run (35th St. and Hillen Avenue) and Maidens Choice Run have completed preliminary engineering studies and are currently under review with various agencies to explore alternative solutions, including possible property acquisition. Other localized project areas are funded in the Capital Development Program for initial study. This includes one million four hundred thousand dollars in FY '77 and '78, for erosion control projects dealing with stream bank stabilization.

G. Floodplain - stormwater management regulations

The City of Baltimore has been involved with stormwater management regulations in two basic areas, first to comply with the Federal Flood Insurance Program, and secondly on a State level to deal with inter-jurisdictional watershed management and floodplain control.

The City is now functioning under interim maps released by the Flood Insurance Administration on June 28, 1974. It is expected that release of the final special flood hazard maps will be in mid-1976 and at that time the City will be required to develop land use controls and measures within a six month period from the issuance date. Because the City has participated in this program since 1971, drafts of legislation have been developed and are under review within affected agencies.

Baltimore City, the Department of Planning, participated in drafting legislation submitted in the 1975 General Assembly. Although not approved, a House Joint Resolution #76 mandated the Department of State Planning and the Department of Natural Resources to review floodplain and stormwater management legislation to generate suggestions to the 1976 General Assembly. Baltimore County and Baltimore City have participated, at the request of the Committee on Environmental Matters, with the State agencies to develop legislation.

H. Identification of major and minor project study areas for flood control, sediment and erosion control in both watersheds.

As indicated on the critical flooding areas map there are numerous projects which require attention by both jurisdictions. The Corps of Engineers is currently conducting the "Baltimore Metropolitan Area Flood Control Study" to determine whether improvements in the interest of flood control are advisable at this time along streams in the Baltimore metropolitan area. Colonel Robert S. McGarry, District Engineer, has initiated a management level group to coordinate the study with on-going activities at both the State and local level. This resulted from conversations with Baltimore County and Baltimore City officials.

This coordination effort coupled with the on-going activities of the Capital Development Program is expected to insure a comprehensive approach to designate specific projects within Baltimore City and interjurisdictional watersheds.

I. Coordinated impact analysis

Through the various programs outlined in previous text, Baltimore County and Baltimore City have initiated efforts to review projects which directly effect storm water control and floodplains. This, as stated previously, is a developing and on-going activity. Both Baltimore City and Baltimore County regulations are under study to identify inconsistencies and points which will require improvement to meet Federal Flood Insurance requirements.

FLOOD ALERT SYSTEM TEAM

Throughout the region, and especially the urbanized areas of Baltimore City, there is a definite need to involve the citizens in understanding both the principles and practices of storm water management programs. In both generalized and local flooding situations people have not only begun to express a desire to effectuate a change in their immediate problems, but also those on a larger scale. The Department of Planning has for some time worked through its' District Planners to inform the public of storm drain projects and to act as a laision with the Department of Public Works. This is exemplified by the Mayor's Advisory Committee on Herring Run, a group of citizens, State Senator John Carroll Rynes, and members of the Department of Planning, working together for the improvement of the Herring Run stream valley. A concentrated program of public works project, citizens action, and a longer range planning and acquisition effort have begun to make citizens and public officials aware of the problems and solutions in that area. Storm water management, flood control, pollution abatement, and recreation needs are combined in a drive for a unified program. This type of effort should be enlarged to include all watersheds and involve a multi-jurisdictional effort on both the citizen and public official level.

Within each watershed there are certain areas which have a history of localized flooding problems. Many have begun to be corrected, others are now under study and projects are planned for the near future. It is important that the public agencys responsible for the projects have accurate information on these situations and work with those citizens effected for both immediate and long range solutions. This can be accomplished through programs, developed by the Department of Planning, State agencys, and other departments within the City.

Two primary programs will be required to meet the needs of the larger area of storm water management and the more localized flooding areas.

a) The first is an information process developed to transmit requests or concerns from citizens groups to the proper agency and a method of informing those groups of current and planned storm water management programs. This would be modeled on a format closely related to that established by the Herring Run Advisory Committee, yet greatly expanded to include citizens groups within Baltimore County. It will also be necessary to begin a coordinated effort of staff communication between both planning agencys. Common ground for studys and information would be established to bring about a comprehensive planning process and storm water management program. The suggested model area for this study would be the stream valleys within the City which hold some of the most critical interjurisdictional environmental problems.

b) The second point involves an action effort by all concerned agencys to deal with known problem flooding areas on a localized basis. The Department of Planning has been functioning as the agency to study and formulate approaches to various storm water and flooding problems within the

City of Baltimore. This program was developed to fulfill requirements of the National Flood Insurance Program and City Council Ordinance #1915. Within the National Flood Insurance Program there are provisions for developing storm emergency plans to protect lives and minimize damage to public and private property. While it is obvious that there is a necessity for this kind of planning in a major emergency, ie. the storm of August, 1971, or 'Agnes' in June of 1972, there is increasing evidence that a flood alert system should be formulated for minor, localized flooding situations. Often, these isolated incidents can be as destructive, on a small scale, as major storms are in any given area. This can be found in numerous sections of Baltimore City and County and is especially prevelent along Frederick Avenue in the Maiden's Choice Stream Valley. Flooding has been an increasingly common situation in the 4800-5100 blocks of Frederick Avenue and several of the adjacent streets. Flooding of this type occurs several times each year, generally during the wet summer months. Newspapers produce photographs of residents stranded in automobiles or trying to unclog storm drains. This places a number of people in a potentially dangerous position and caused damage to residences, apartments, automobiles and lawns. It is in exactly this type of situation that the proposed Flood Alert System Team (F.A.S.T.) would function.

Large segments of this system are presently in existence and were utilized during the tropical storm "Agens". The Disaster Control Center, the Department of Planning, Public Works, Transit and Traffic, the Police Department, the U.S. Weather Bureau, and various private citizens and agencies should be brought together to develop and manage a comprehensive warning and action system. Perhaps the best example of how F.A.S.T. would be implemented is by siting the situation created by the conditions of June 23, 1973, Frederick Avenue.

1. A communications link between personnel in the U.S. Weather Bureau, the Disaster Control Center, Transit and Traffic, Police Department, Public Works, and Health Department would be implemented. Up to date information as to a storm's direction, duration, and intensity would be transmitted to the these agencies. When conditions develop and storm warnings are posted certain agencies work forces would be put on notice.

2. A criticial area's list would have been developed by the Department of Planning and Deparcment of Public Works. This would be from past information and cover several levels:

a) Localized flooding due to inadequate drains, sump conditions, or clogged inlets. These areas are generally known and mapped, and is the situation with Frederick Avenue, Tiffany Run, North Point Boulevard etc. As it becomes evident that flooding would occur, a previously designated individual in the community or a member of the Police Department, already alerted and watching the critical area, would contact the Disaster Control Center.

The Center would then dispatch a call for the necessary crews to clear drains, direct traffic, or evacuate persons in the area. Citizens on Frederick Avenue recognized clogged drains as a major problem and began hand clearing to lessen flooding, which is a potentially dangerous job when not properly supervised.

b) Residential and commercial areas which have a record of flooding due to various conditions in "a". Individuals would be alerted as to various methods of 'floodproofing'. Industries would be alerted to take appropriate steps to protect machinery and/or stock.

c) General flooding areas where overbank or poor drainage becomes a major problem, endangering lives and property. Residents in these areas should be alerted to be ready for evacuation and to protect personal belongings. The communications link established in 'a' would continue to function providing information and requests for aid to the Disaster Control Center.

Although this system seems most appropriate to major storms, even for localized situations, there should be a predetermined system for communications between weather officials and an agency within the City structure. It is also imperative that 'critical areas lists' be prepared for each watershed. This has been compiled by the Department of Planning. This action is a segment of addressing a very large and complex problem, immediately. With the number of heavy but brief rainfalls this area is experiencing this type of program will aid persons faced with an immediate problem. In the future this system will become a portion of a comprehensive flood and storm water management program. These actions will function within an overall plan which has delineated flood plains, formulated development guidelines, and initiated flood control programs. Until that time F.A.S.T. could alleviate and/or minimize numerous hardships of those persons who are periodically forced to deal with flooding.

JAMES B. COULTER
SECRETARY

LOUIS N. PHIPPS, JR.
DEPUTY SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401

July 15, 1975

The Hon. William D. Schaefer
Mayor, City of Baltimore
230 City Hall
Baltimore, Maryland 21202

Dear Mayor Schaefer:

This is in response to the joint letter from you and Baltimore County Executive, Theodore G. Venetoulis, requesting our participation in a storm water management program for the Jones Falls watershed.

We welcome the opportunity to join forces with the County and Baltimore City. The breakdown of responsibilities outlined in the joint letter seems reasonable but I will leave the final arrangments to the judgment of the Water Resources Administration.

The Water Resources Administration will serve as the lead agency for the Department and I expect that they will do the lion's share, if not all of the work. The Water Resources Administration is working under strict budgetary constraints. Those constraints will make it necessary for the Administration to reschedule other work so that they can do our part of the work with existing staff and budget.

I have asked Mr. Herbert M. Sachs, Director, Water Resources Administration, to review the proposal outlined in the letter and to designate a person to be in charge of the work and to finalize the arrangements for our participation.

Sincerely yours,

James B. Coulter

James B. Coulter
Secretary

JBC:jd

BALTIMORE COUNTY

Baltimore County Completion Report

Joint Study of
Storm Management Problems
of the
Jones Falls Watershed

In addition to time, material, and facility contribution made by Baltimore County in the general support of this project as outlined in the Consultant's Scope of Work, including expenses incurred in the preparation of pertinent information, participation in project planning and progress review meetings, and technical discussion with City and Consultant personnel, the County performed the following specific work elements:

Task 1 - Preliminary Investigation

A. Assembled for review by Consultant all pertinent stormwater management reports and related data for the City and County areas in the Watershed.

Task 2 - Inventory and Analysis

A. With assistance of Consultant and City representatives, formulated a base map and associated graphics for use in analyzing the watershed as a hydrologic unit. The related base data included existing and future residential, industrial and commercial development identification; stormwater control, collection, and conveyance systems; soils characteristization; and major drainage area delineation.

B. Provided the Consultant with high water marks and alluvial soils information required for determination of a 50 to 100-year floodplain in the County portion of the Jones Falls Watershed.

The results of the above work elements were incorporated into the Joint Study of the Jones Falls Watershed. The Completion Report for this activity begins on the next page.

BALTIMORE CITY-COUNTY JOINT PROGRAM

PLEASE NOTE

Though for administrative purposes Baltimore City and County were treated as individual recipients, there was a joint study conducted to address interjurisdictional flooding problems. FDCO facilitated the selection of Roy F. Weston, Inc. to conduct this large scale study of flooding in the Jones Falls watershed. The participating jurisdictions were brought together by the FDCO to maximize the potential benefits of such a study. Baltimore City and Baltimore County retained Roy F. Weston, Inc., under separate but compatible contracts. This required a revision of the original Baltimore City contract as well as a change in what was proposed as the Baltimore County program. The total project cost of $50,000 was divided in the following manner:

1) $25,000 from EDA funds allocated to Baltimore City
2) $25,000 from HUD funds allocated to Baltimore County which required matching funds of $12,500 from the County

Completion Report
for

Jones Falls
Watershed Management Study

This Final Report presents a complete documentation of findings, conclusions, and recommendations pertinent to the Jones Falls Watershed Management Study. The study assesses flood control needs and identifies watershed management alternatives.

The Jones Falls Watershed is subject to very serious chronic flooding. After years of study the very real threat of flooding still remains, and everything points to the situation worsening before it improves.

The mix of urban, suburban, and rural land uses within the watershed creates definite complications in both assessing and resolving the flood problems. Further compounding this matter is the fact that the watershed is divided by the jurisdictional boundary between Baltimore County and the City of Baltimore. Issues which need to be addressed include the determination of flood damage accountability, the distribution of flood control responsibility, and the validity of applying related land use controls in the respective jurisdictions.

The problem has been addressed before, and many different solutions have been proposed. For the most part, these represent only partial solutions, in that they seek to correct flooding problems at particular points, without considering the upstream and downstream impacts. Such solutions are incomplete and in fact create secondary impacts which may negate the primary benefits. This points out the need for a more comprehensive approach, one which considers the watershed as a whole in developing flood-control alternatives.

The purpose of this study is to develop such an approach and apply it to the Jones Falls situation. The product of this

effort is a Watershed Management Program outline, which sets forth the framework for a joint management program to be administered and enforced by the City and County. Obviously, the key to such an arrangement is to establish and maintain a stable cooperative relationship between Baltimore County and the City of Baltimore. An interjurisdictional watershed management program is a means for achieving this relationship. Once established, such a program would also serve the flood-control needs of other watersheds common to the City and County (e.g., Herring Run and Gwynns Falls).

A paramount issue in this study is the use of land use controls to achieve direct and indirect flood-control benefits. Such controls apply in different respects to floodplain lands and non-floodplain lands within the watershed. In any case, the basic concept involves the restriction of uses which can be applied to a given piece of property. These restrictions can be effected either through police power (regulation of land use activities) or through eminent domain (condemnation), provided that the benefits of such actions are proven to be in the public interest. When the use of police power or eminent domain cannot be legally justified, the acquisition of land in full fee can accomplish similar objectives.

The imposition of land use controls often creates a conflict between the administering agency and the affected property owner. The validity of such controls is directly related to the justifiable public health and welfare benefits achieved. These benefits need to be carefully weighed in determining the extent to which land use controls are worked into the overall management program.

In summary then, this study has attempted to address the issues of interjurisdictional management and related land use controls. Together with the numerous other diverse and interrelated issues at hand, these were carefully considered in formulating flood-control objectives and in developing practical solutions. Both the City and the County have actively participated in this study through appointed representatives of the respective planning and public works agencies. Private property owners were also represented, through the participation of the Jones Falls Valley Industrial Association. These input have been invaluable in assessing the practical feasibilities of different alternatives.

It is believed that the management program proposed herein is responsive to the respective needs of the County, the City, and

private property owners. The underlying objective of the program is, of course, to benefit the general public welfare by preventing flood damage (i.e., property damage and loss of life) and by promoting sensible safe uses of flood-prone lands.

The all-important next step is the implementation of the management program according to the program outline. This requires that the necessary joint agreements and commitments be made and upheld. Of primary importance is that the City and County immediately establish a process whereby management decisions affecting flood control objectives are mutually arrived at, regardless of jurisdictional location. Based on this type of cooperative effort, an effective flood control and storm water management program can be accomplished. This Report fully addresses the respective roles of the City, County, and State in implementing such a program.

RECOMMENDATIONS AND CONCLUSIONS

The dominant conclusions of this study relate to the feasibility of structural control alternatives as contrasted to nonstructural methods, and the need for a separate administrative authority responsible for implementing the management program proposed herein.

Regarding the feasibility of structural controls, it is felt that such measures should be limited to upstream peak flow reduction facilities and floodproofing within the floodplain when appropriate. Attempts to increase downstream flow capacity artifically (i.e., extensive channelization) are not considered cost-effective and do not appear to provide a reasonable level of protection in absolute terms. This is not to discourage any valid stream improvement operations, such as stream bank stabilization and stream maintenance.

It is apparent that a formal arrangement between the City and the County is essential in order to establish effective priorities for watershed management. It is felt that this formal arrangement should culminate in the creation and maintenance of Flood Control Authority having total watershed jurisdiction.

The following specific recommendations serve to reinforce the above-stated conclusions:

- An ad hoc interjurisdictional committee should be set up to follow up the recommendations of this Report. This committee would logically be made up of those State, City, and County representatives currently acting as participants in this study.

- A survey of the need for stream cleanup measures should be conducted by the City Department of Public Works. The findings of this survey should be submitted to the ad hoc committee proposed above for review. Recommendations for instituting a routine stream-maintenance program should be made to the Director of Public Works.

- Currently proposed State legislation concerning floodplain management (22) and interjurisdictional watershed planning (23) should be jointly supported by City and County legislators and appropriate officials.

- Every effort should be made to preserve natural floodplains as open space, especially in the upper floodplain areas of the County. This can be enforced through current subdivision review and building permit approval procedures.

- The revisions to the Baltimore City Charter required in connection with the National Flood Insurance Program should be drafted to reflect a liberal interpretation of the land-use control provision. Specifically, the revisions should: propose a two-district flood-hazard zone; specify a 100-year flood elevation, plus one-foot minimum floor elevation; and provide for the termination of nonconforming uses.

- The voluntary relocation of floodplain industrial uses should be encouraged by providing preferential tax treatment, land exchange, or land purchase opportunities. Cooperative taxing arrangements between the City and County should be considered to avoid the loss of tax base.

- Parallel City and County resolutions creating a Jones Falls Flood Control Authority should be drafted, with the ad hoc Jones Falls committee providing the main input. If enabling State legislation is required, appropriate sponsors should be contacted. If adoption of the City and County resolutions encounters significant obstacles, other approaches should be investigated.

- Joint planning efforts should be formally arranged between the City and County, ideally with the creation of a special interjurisdictional planning task force. Once initiated, this task force should begin discussions of cost-sharing, mutual planning review, and interjurisdictional agreements. If basic flood-control objectives are not officially adopted at this time, the task force should pursue this as a first order of business. An outline of specific objectives should be prepared and the comprehensive planning process begun.

- The special planning task force should determine the engineering feasibility of a modified structural control proposal, including: upstream retention basins on North Branch, Deep Run, and Moores Run; flood storage in the Green Spring Valley floodplain just above Deep Run on the Jones Falls; and structural alterations to Lake Roland Dam, entailing the raising of the dam crest elevation, lake dredging, embankment stabilization, and the replacement of gate structures with devices better suited to the rapid draw-down of reservoir for flood storage. This feasibility study should address the effectiveness of such a combination of structures in reducing peak flow. This

alternative should be viewed in light of providing protection, not for existing floodplain uses (as relocation of those uses is recommended), but rather in light of the protection provided to Downtown Baltimore during the 100-year flood as projected by the Corps Flood Insurance Study.

- The restoration and maintenance of Lake Roland should be actively pursued in light of the indirect benefit of increased potential flood storage.

- The special planning task force should investigate the proposal of removing non-essential bridge structures and other stream crossings. Appropriate recommendations should be made to the Baltimore City Director of Public Works.

- Land use proposals attempting to control growth rate, growth distributions, and growth densities should continue to be pursued under the existing local planning structure, since there is every indication that existing policies are sound and effective in promoting wise land use compatible with watershed management objectives.

- As an alternative to the modified structural control proposal just discussed, the concept of complete onsite runoff detention should be investigated. The functional and cost effectiveness of providing 100-year runoff detention onsite throughout the watershed should be compared to that of the instream structures of the first alternative.

- The funding possibilities through the SCS (PL 566 Watershed Project Program) and the FHA (Watershed Protection Program) should be pursued by the special planning task force.

- Rearranging local budget priorities to reflect flood control needs should be attempted in order to finance the local shares of joint programs.

In summary, the program offered herein seeks to utilize joint management mechanisms and comprehensive planning methods to develop a long-range solution to chronic flooding problems in the Jones Falls. The major elements of this program deal with initiating and maintaining productive planning and management

relationships between Baltimore City and Baltimore County. The precedent set by these arrangements would greatly facilitate the application of similar concepts to other interjurisdictional management situations in the City and County.

CECIL COUNTY

COMPLETION REPORT
PORT DEPOSIT FLOOD RECOVERY
AND PREVENTION PROGRAM

Planning services were provided by the Cecil County Planning Staff as part of the Port Deposit Flood Recovery and Prevention Program. These services were rendered in accordance with the amended Scope of Services which was revised on August 24, 1973. All services were accomplished to the fullest degree possible depending on the availability of information and the state of report completion of other agencies and consultants.

A Staff Planner was provided from the County Planning Office on an average of three (3) days a week. He was given office space in the Town Hall with use of the telephone as needed. His residence in Port Deposit provided liaison with the Town Officials and field personnel of Edward A. Richardson Associates, Incorporated, program consultants. The Staff Planner also coordinated activities between the above participants and the County, State, and Federal Officals. The Staff Planner also performed duties concerning the program from the Planning Department Office in the County Court House located in Elkton, Maryland.

The Staff Planner assigned to this program, along with the Planning Director's assistance worked hand in hand with the personnel from Richardson Associates in coordinating the program, directing the consultant in interpreting the tasks in the Scope of Services for both participants. On-site activities were attended to as the need was generated. This entailed stream inspection and damage survey with the consultant field party and town officials, the formulation and submission of application for Federal Flood Insurance, the organization of a Town Planning Commission and on-going technical staff assistance to this commission. Local activities also included periodic review of program progress with local authorities, development and initiation of an interim zoning ordinance, along

with the continuing coordination of program activities in light of the Bainbridge situation and studies being done by the Susquehanna River Basin Commission (SRBC), etc.

Much of the consultant's field work was done with the staff planner present and a large portion of the collection and assembly of the resource data was accomplished by the County Planning Office. The local staff was also instrumental in acquiring additional funds for photogrametry and topography necessary to provide meaningful engineering analysis of the town and surrounding area. The progress and direction of this study was monitored through the periodic meetings held to review these aspects. While the Scope of Services of both parties called for quarterly meetings, it was necessary to meet more frequently than that in order to maintain proper coordination. The preliminary and final drafts of the consultants reports were reviewed by the County Planning Staff and Public Works Staff with comments being noted on the provided copies. These copies were then returned to the consultant and comments were discussed at meetings with the project staff of Richardson Associates, Inc.

A key meeting was held in mid June which set the initial tone and direction for the project. General discussion took place on Scope of Services and coordination and interrelationship of tasks so as to achieve the most work with a minimum of duplication. Another meeting was held in August to discuss changes in the County Scope of Services and the ramifications on performance of tasks. A third key meeting was held on November 19, 1973, to discuss progress and problems as of that point in the program. Several topics of discussion included the reassurance by the consultant that acquisition of the necessary mapping information will allow them to meet the requirements of the Scope of Services in the time agreed upon and the disruption in the program caused by the change in leadership of the Flood Disaster Coordination Office in State Planning. Other on-going considerations concerning the study include discussions on annexations

and uphill development, with specific areas being considered for future development; expansion of the waterfront for industrial use as opposed to development for recreational activities.

Meetings with the consultant and town representatives were held by the County Planning Staff on a monthly basis, with the exclusion of January, during the remainder of the study period involving the consultant. The topics discussed were involved with the general progress of the program and the administration between the local parties, the consultant, and the State and Federal agencies involved. Specific discussion continued on the aforementioned subjects, along with other pertinent matters which impact the analysis of demographic, economic, and physical data collected and surveyed.

The County Staff Planner and/or the Planning Director met with the Town Council at their regularly scheduled monthly meetings. Discussion on the study was part of the normal agenda so that all members could be brought up to date on the progress being made and problems encountered along the way.

The County Planning Staff assisted by Mr. Aubrey Romine, Regional Planner, for the Office of State Planning, helped the Town Council to create a Town Planning Commission. A letter was sent to the Cecil County Commissioners requesting technical assistance and inclusion in the County Overall Program Design (OPD) for Port Deposit. This was accepted by the County and the County Planning Staff began attending regular meetings of the Port Deposit Planning Commission. The staff assisted in the development of an interim zoning ordinance. Such a document was intended to enable the town to exercise sufficient control over future growth which now must comply with regulations in order to meet flood insurance standards. As an interim measure, this code which was enacted by the Town Council in December, 1973, will allow for some control while the town embarks

on the creation of a Comprehensive Plan and accompanying Zoning Ordinance. The procedures set up under the interim zoning ordinance require that any new construction and/or changes to existing structures within the town are to be reviewed and approved by the Planning Commission before going to the County for a building permit which must be approved by the County Building Inspector and the Health Department. The permits are issued pursuant to the B.O.C.A. Code.

The Cecil County Planning Department, under their Scope of Services, was to provide or assist in obtaining any data and material available from their resources or from those of other local agencies for Edward H. Richardson Associates.

Demographic data was supplied from several different sources by the County Planning Office. The main source was the 1970 census data published by the U.S. Department of Commerce, Bureau of Census. The Planning Department has in its files publications for both Maryland and Delaware on General Population, Social and Economic and Housing Characteristics. Secondary sources available are documents prepared by the State Department of Planning on population, housing, family income and the labor force; a third source in the local staff library is the annual vital statistics Report published by the Maryland Department of Health and Mental Hygiene. These documents were made available to the consultant or used by the staff to extract and compile needed demographic information.

The local staff had already begun to develop data for its comprehensive planning effort in both the area of demographics as well as physical and some data was available because of statistics supplied for the initial Bainbridge Report prepared by Ecnomic Adjustment Committee of U.S. Defense Department.

Physical data was not as readily available as demographics, however, every effort was made to obtain the necessary material for the consultant or to assist in the development of the data required to provide a meaningful analysis. In this respect, the County with its own funds ($4,700) purchased additional

aerial photography of the area in question along with two foot (2') contour maps derived from this photographic efforts. The Planning Office provided the consultant with current land use information after conducting the necessary survey. This provided the basis for the background analysis and more complete understanding of the town's existing problems as well as limitations. A survey of flood damage was also conducted through a joint effort of the town officials, County Planning Office and consultant personnel. Other information regarding soil conditions and transportation routes was supplied by in part by the County along with the subsequent analysis of the materials for the development of the plan.

The consultant was given every assistance in the review of data on flooding in the town of Port Deposit. On-site surveys were conducted along with review of historical information on the nature and extent of previous floods of major consequence. Surveys were also made of the five streams whose courses traverse the town as well as the damage incurred from the Agnes flooding.

The County through reciprocal resolutions with the Town of Port Deposit has agreed to provide technical and financial assistance when requested and possible. This agreement embodies the type of assistance and financial expenditures given in this program.

Even before the signing of contracts, the County began its assistance to the town by aiding in the development of the necessary paper work to make application for the funds to support this study. This assistance was a coordinating effort with Mr. James Leanos, who at that time was working under a contract with the Department of Economic and Community Development to provide administrative help to the community in question. When Mr. Leanos's contract was complete, the County Planning Staff assumed all local responsibility to provide or seek services desired by the town.

The County office participated in the interview and selection of the consultant to perform this study as well as to assemble and prepare the necessary

data for requesting eligibility for federal flood insurance; this included the preparation of maps and supportive narrative about the area.

The single most important action taken by the County in this program was to assist the town in creating a Planning Commission. This was done under the guidelines and in accordance with Article 66B, Section 3.01 (b) of the Annotated Code of Maryland. The newly formed Planning Commission of the Town of Port Deposit with the aid and assistance of the town's attorney, has adopted an interim zoning ordinance. This ordinance, which had been previously submitted to the Department of State Planning as a part of a previous progress report on Flood Recovery Assistance Activities, was accomplished in order to provide building and land use control which was necessary in order to meet certain requirements of the Federal guidelines for granting flood insurance.

With the knowledge of certain activities pending at that time, it was felt by the Commission that the time required to delineate zoning classifications within the town and to couple this with a definitive zoning ordinance code book would consume a dangerously lengthy period of time. In other words, by the time the Commission would have completed the zoning effort some of the changes of immediate concern, it was designed to control would have been accomplished.

Mr. Brown and Mr. Rever, of the County Staff, participated in all the meetings of both the town council and planning commission to provide technical assistance as well as interface to other principals in the program. Such items as a Comprehensive Plan, subdivision regulations, zoning ordinances, building codes, and annexation policies were discussed. Priorities and scheduling discussion precipitated actions to ask County assistance in application and policing of building and to commence development of other documents when this program was near completion. Most of the legal services accounted for in this program were spent on this item for the drafting of the necessary resolutions, the interim zoning document, and

and participation as legal council for the newly formed planning commission.

The question of the town and its relationship with the Bainbridge Naval Training Center is vital to the future of Port Deposit. The town officials have participated in the actions concerning Bainbridge since the very beginning when the Economic Adjustment Committee of the U.S. Defense Department held a two day seminar at the facility to discuss the impact of the base closing.

The Town of Port Deposit has direct economic and physical ties to the naval facility and the future uses that might occur there are of a major concern to its residents. Representatives of the town have attended meetings with the local staff or have been represented by them at important meetings with local, State, and Federal agencies involved. At the time when this program was completed, the County and State were engaged in the development of a re-use study for Bainbridge and the Town has been and will continue to be directly involved. The Consultants report with it's background information, planning analysis and implementation suggestion will provide a significant input to the Morton Hoffman Company report on alternative re-use approaches for the Bainbridge Training Center. In turn, the report by Hoffman will aid in the continuing assistance effort of the County to develop the necessary plans and tools of implementation for Port Deposit.

The flood damage survey was conducted through the efforts of consultant with the direct assistance of the County staff. The findings of this survey were published as part of the Comprehensive Flood Recovery and Prevention Planning Study, under background studies, Section H, beginning on page 62. Results of this survey are also reflected in other sections of this study, particularly the Implementation Program and Planning studies areas.

The purpose of the survey was to ascertain the extent and types of damage sustained during the Agnes Storm period, so that there will be a basis for development of codes and ordinances. This type of information will also be useful in the formulation of a comprehensive plan with regard to future land use and other policy

decision for growth. The physical and fiscal data was also reflected in the capital improvement program suggested by the consultant. Such improvements include upgrading of the existing drainage system and the development of controls to require developers of uphill land to provide the necessary facilities to handle water, sewer, storm drainage, open space, and recreation.

The Susquehanna River Basin Commission was to perform a flood study on the river which included a segment from Port Deposit to Havre de Grace. However, this data was not available until the study period was over, but the staff will endeavor to get this information when it does become available. The date will be included in the comprehensive plans and the flood zones delineated on the towns topographic maps.

The Baltimore District U.S. Corps of Engineers was preparing the Susquehanna Flood Control Review Study. The purpose is to identify reservoirs which can provide maximum flood reductions in the Susquehanna Basin. Again, this study was not complete until after the end of the program period, however, findings that were available indicated that effects of any reservoirs on flood plains at Port Deposit would be minimal.

It has been suggested that the Penn Central Railroad traversing the town be utilized as a levee. Flood waters during the Agnes storm may have been retained by such a device, but justification would rely heavily on considerations of the economics and efficiency of the measures employed. Such a project would require extensive modifications as detailed in the consultants report.

Cecil Soil Conservation Service participated in the survey of the five streams which flow through the Town of Port Deposit. These streams are characterized by steep slope as they enter the town which accounts for the high velocity flow during storms. Each of the streams in question were analyzed separately both hydrologically and hydraulically. The three major streams drain an area in excess of 2,300 acres and are the major problem source. Generally, the Soil

Conservation Service involvement included identification of the drainage areas, field inspection and consultation on recommendation for corrective action to alleviate the conditions. This information is contained in the consultant's report on storm water management.

HOWARD COUNTY

Howard County

Completion Report

Allview Estates - Elkridge
Interim Flood Plain Study

Allview Estates

The first step in developing alternative methods of flood prevention is, of course, determination of the degree of flooding, the frequency of flooding and the resultant damages. With this data in hand the next logical step is to develop methods of preventing flooding and/or preventing damages. In order to evaluate the feasibility of any alternative measures, the costs of such preventive measures must be weighed against the benefits gained. While this cost-benefit comparison is a definite factor, it frequently is not the sole factor to be considered.

By implementing this study, Howard County has recognized the desirability of determining possible flood control measures that would be compatible with other planned storm water management programs with the intent to correct or at least reduce the flooding hazard that exists in Allview Estates until the retention dam program is accomplished.

This study evaluated alternative measures for interim flood control including cost, benefits and effects to make the County more aware of the financial implications of assuming all or part of the responsibility for flood damage prevention in this particular community.

The alternative measures have been developed to provide complete protection for all the homes in Allview Estates and all such measures have been evaluated on the basis that the U. S. Soil Conservation Service will construct flood control dam's upstream. The recommendations contained herein include

consideration of methods beyond the originally intended interim measures and are in fact, permanent solutions to the flooding, recommended on the basis of cost, benefit, effect on the residences and probability of prompt implementation.

The alternative measures investigated are listed below with brief explanation of the system and the reason for selection or rejection:

Flood proofing - The establishment of the water surface profile for a 100-year frequency storm with the watershed completely developed as zoned, and the S.C.S. dams constructed as planned and scheduled by Howard County, indicated that the predicted depth of water in the basements of flood prone homes was less than 2.5 feet in all but 9 dwellings. An evaluation of the structures predicted to be flooded to a depth of 2.5 feet or less indicated that flood proofing by constructing flood walls around basement entrances, waterproofing of basement walls, installing foundation drains and sump pumps and minor regrading of lawns, was an approach that yielded a favorable benefit compared to cost, assuming the damages saved were from a 100-year storm.

The costs of an individual effort to eliminate flood damage to those homes with predicted flood depth greater than 2.5 feet were significantly higher, but taken in the aggregate, individual flood proofing to eliminate predicted flood damage was less costly than all other alternatives by a substantial margin.

The methods developed for this individual flood proofing approach provides a 2 foot free-board above the predicted 100 year frequency storm flood stage. In recognition that the methods of determining this flood elevation are considered very conservation, the probability of a storm of such intensity and duration occuring that would crest the flood proofing is extremely remote.

On the basis of the above factors, the method of prevention of damage to flood prone dwellings in Allview Estates by individual flood proofing is recommended, however, in recognition of the inconvenience that will be caused to those residents with severe predicted depths of flooding during the installation of the flood proofing measures, it is further recommended that individual flood proofing be implemented in conjunction with other methods of flood level reduction discussed under "Recommendations".

Levees - In recognition of the number of individual homes affected by the predicted flooding, an alternative method of flood prevention investigated was by the use of levees. The flood prone area along Carlinda Avenue is suited to protection by a levee, however, the lack of adequate area for storm water storage necessitates the provision for a pumping system to discharge the storm water that collects behind the levee into the Little Patuxent River.

The flood prone area along Allview Drive is less suitable to a levee system, however, such a system is possible to construct. A similar lack of area for storm water storage also necessitates a pumping system. In addition, 5 flood prone homes along Allview Drive are not protected by these levees and must be protected by other measures.

The levee system as a method of flood protection is not recommended due to the construction cost which is estimated to be approximately 800% greater than individual flood proofing costs and in addition would involve a significant annual maintenance effort. Further, the construction of such a dike immediately behind the homes backing on the stream valleys would completely destroy the aesthetic benefits of these locations.

On the basis of the above factors, the method of prevention of damage to flood prone dwellings in Allview Estates by individual flood proofing is recommended, however, in recognition of the inconvenience that will be caused to those residents with severe predicted depths of flooding during the installation of the flood proofing measures, it is further recommended that individual flood proofing be implemented in conjunction with other methods of flood level reduction discussed under "Recommendations".

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The flood prone area along Allview Drive is less suitable to a levee system, however, such a system is possible to construct. A similar lack of area for storm water storage also necessitates a pumping system. In addition, 5 flood prone homes along Allview Drive are not protected by these levees and must be protected by other measures.

The levee system as a method of flood protection is not recommended due to the construction cost which is estimated to be approximately 800% greater than individual flood proofing costs and in addition would involve a significant annual maintenance effort. Further, the construction of such a dike immediately behind the homes backing on the stream valleys would completely destroy the aesthetic benefits of these locations.

Raising Carlinda Avenue - Raising Carlinda Avenue was considered as an alternative measure at the suggestion of the Allview Flood Control Committee. The direct benefit to be derived from the raising of the road bed is essentially limited to one of assuring vehicular access to seven homes during the flood crest. In addition, the raising of the roadway adversly affects those homes on the east or river side of the road. No direct flood protection is afforded by this proposal and, therefore, this alternative is not considered as a feasible solution.

Beaver Run Retention Dam - Flooding of homes along Beaver Run within the study area is primarily due to the back-water from the Little Patuxent River. Several homes along Allview Drive beyond the reach of the back-water of the Little Patuxent are predicted to be flooded by the waters of Beaver Run from the 100 year design storm with full development of the watershed. As an alternative to individual flood proofing, an investigation into the costs and benefits of a retention dam upstream of Allview Estates was made in response to the request of Howard County. A feasible site is available just north of U. S. Route 29, however, the cost of such a structure is significantly greater than the limited benefit to be gained.

This alternative is not recommended as a feasible solution in view of the high cost compared to estimated benefit and in view of the greater time required to provide the flood protection for the several homes that would benefit. In spite of the additional benefit of sedimentation reduction in the downstream reaches of Beaver Run, which would create periodic maintenance costs to assure adequate storage capacity, this alternative is not recommended.

Patuxent River Channel Improvements - As a result of the commitment of the Howard Research and Development Corporation to assist the Allview Flood Control Committee by providing data and analysis of alternative measures beyond the scope of this report, a considerable effort was devoted to determining the costs of certain channel improvements that could lower the predicted flood elevations in Allview Estates. This study investigated the effects of minor Patuxent River channel improvements, such as clearing the flood plain area of brush and selective tree removal, as well as major channel improvements involving excavation of a channel 40, 60, and 80 feet wide.

The effect on predicted water surface elevations was calculated, as well as the construction cost for the various combination of alternates studied. These indicated that the most significant reduction in flood elevation (5.3') in the Allview Estates area is realized by the construction of a 60' channel bottom improvement to the Little Patuxent River from Guilford through Allview (Alternative Scheme No. 2, 3, & 4) at a cost estimated at $710,000. Such a project, however, would still subject at least seven homes to various degrees of flooding ranging from several inches to approximately 5 feet in depth. The impact of this proposal on downstream properties has not been evaluated and such a project cannot be seriously considered until such an evaluation has been made. Such a significant change in the flow characteristics could have serious effects on downstream river crossings and may even endanger improvements at Savage, Maryland.

On the premise that Howard County has an obligation, either moral or legal, to protect the homes in Allview Estates from the flood level anticipated to result from a storm of 100 year recurrence frequency with full watershed

development and with reference to the discussions elsewhere in this report relative to alternative measures evaluated, it is recommended that the Little Patuxent River flood plain be cleared of all brush and selectively cleared of trees, to improve the flow characteristics, from the vicinity of the Guilford gauging station through the length of the river adjacent to Carlinda Avenue. It is further recommended that those homes still within the reach of a flood from a 100 year storm be protected from damage by providing individual flood proofing as required to allow a 2 foot free-board above the predicted flood level. This recommendation is based on the scheduled program of construction of the Soil Conservation Service dams and the current Howard County regulation that prohibits new construction of habitable flood space less than 2 feet above the 100 year storm flood.

It is believed this strategy of protection will prevent all damage to homes and household furnishings and with the existing flood warning system, recently installed upstream of Allview Estates, explained in the Flood Warning System of this report, all vehicles can be moved to safety. It is also believed that the conservative posture assumed in the development of the 100 year storm peak flow rate, in conjunction with the 2 foot free-board of protection provided by this flood proofing, will provide protection from all but the most severe, catastrophic storms that logically cannot be designed for under accepted practice.

In recognition that the construction of the flood proofing required in several homes will cause unusual hardship and inconvenience to the occupants, it is suggested that Howard County offer to buy these homes at fair market value. After the major flood proofing construction is complete, it is believed

the home can be sold on the market and the net cost to Howard County would be only slightly higher, due to fees and taxes, than if the work was done during occupancy. Under this plan it is conceivable the net cost could actually be less depending on the cost, the resale price and the possible decrease in flood proofing construction cost due to the lack of necessity to maintain water, electric, sanitary, and fuel services during construction. This option is recommended to be offered only to those dwellings which are predicted to be severely flooded and require abandonment of basements and the raising of the home in elevation.

The owners of the remaining dwellings suggested to be flood proofed may take advantage of the revolving loan fund established in the Howard County Capital Improvement Program. This program makes low interest loans available to property owners whose improvements are within the 100 year ultimate development flood plain plus two (2) feet. This fund is intended exclusively for flood proofing of flood-threatened homes and is available in maximum amounts of $6,000. Present requirements for eleigibility stipulate that the property owner must have flood insurance. In this regard, it is recommended that the owners of all homes within the influence of the predicted 100 year frequency storm be required to purchase flood insurance in an amount commensurate with the level of damage possible as a condition of providing flood proofing.

It is believed that the combination of these recommended improvements:

1. Construction of the four proposed storm water retention dams on the tributaries of the Little Patuxent River;
2. Clearing of the flood plain of the Little Patuxent River from Allview Estates downstream to Guilford;

3. Flood proofing of individual homes within 2 vertical feet of the predicted resultant 100 year storm flood;

4. Purchase of flood insurance by the owners of flood prone homes, and;

5. Continued improvements through experience of the flood warning system recently implemented on the Little Patuxent River;

will provide complete protection for the residents from all but catastrophic storms except for limited damage resulting from yard furniture damage and sedimentation and erosion of lawn areas.

The total cost of the above recommended improvements, exclusive of the S.C.S. dams, and the cost of flood insurance is estimated as follows:

Little Patuxent River Channel Cleaning (from Appendix VI)		$140,000
Flood Proofing of Remaining Dwellings (from Table following)		105,295
	Sub Total	$245,295
	10% Engineering	24,530
Easements for Cleaning (120 Ac @$500/Ac)		60,000
	TOTAL	$329,825
	Say 1972 Cost	$330,000

Recognizing that the work required to prepare plans, acquire rights-of-way, obtain permits, receive bids and complete construction of the channel clearing will require probably 2 years; it is recommended that construction of flood proofing measures for those homes subject to the higher predicted flood elevation, and likewise the highest probability of being affected by storms of less intensity than the 100 year storm, be initiated as soon as funds can be made available.

As an aid to establishing such a program, the following construction sequence is suggested based on a yearly expenditure of approximately $100,000 per year for a three year period.

FIRST YEAR:

Flood Proof:

6705 Carlinda Avenue	$ 9,500*
6709 Carlinda Avenue	9,500*
6713 Carlinda Avenue	17,145*
6730 Carlinda Avenue	3,660
6745 Carlinda Avenue	9,500*
6722 Allview Drive	4,750
6911 Allview Drive	4,060
6912 Allview Drive	3,205
6916 Allview Drive	4,305
6926 Allview Drive	4,630
SUB TOTAL	$70,255
10% Engineering	7,025
SUB TOTAL	$77,280

Engineering for Channel Clearing 10% of $140,000	14,000
TOTAL	$91,280

*Does not include costs due to purchase option by Howard Co. and resale after construction of floodproofing.

SECOND YEAR:

Flood Proof Remaining Dwellings	$34,090
10% Constr. Cost Escalation	3,409
SUB TOTAL	$37,499
10% Engineering	3,750
SUB TOTAL	$41,249
Purchase Easements for Channel Cleaning	60,000
TOTAL	$101,249

THIRD YEAR:	
Construct Channel	$140,000
20% Constr. Cost Escalation	28,000
TOTAL	$168,000
TOTAL CONSTRUCTION COST	$360,529
ANNUAL MAINTENANCE COST OF CHANNEL (120 Acres @ $75/Acre)	$ 9,000

Review of the charts immediately following this section indicates that the recommended solution to avoiding flood damage in Allview Estates is not the least costly. As a basis of reference and comparison, the damage from a single 100 year storm has been tabulated.

This total damage from a single 100 year frequency interval storm is estimated at $216,745. The cost of complete flood proofing is estimated at $263,530 with a benefit/cost ratio of .82 for a single 100 year frequency storm. Damages caused by less severe storms, which would also be protected against, would of course increase the benefit/cost ratio.

Development of this actual predicted benefit/cost ratio is beyond the scope of this report, rather this ratio is intended to indicate the relative advantage of the alternative flood protection measures evaluated in this report.

The four SCS dams are estimated to reduce the one time - 100 year frequency storm flood damage in Allview Estates by $52,104, however, a flood damage potential of $164,641 would still remain. The cost of complete flood proofing for the remaining potentially flood prone homes is estimated at $181,910 with a benefit/cost ratio of .91 based on a one event 100 year frequency storm. The ratio does not, however, include the costs of the four dams which would benefit a much larger area than Allview Estates.

The total flood protection program as recommended herein is estimated to reduce the one-time 100 year frequency storm flood damage approximately $149,964 from the uncontrolled flood, and allow a damage potential of only $66,781 to remain. The cost of complete flood proofing for the remaining potentially flood prone homes is estimated at $104,345 with a benefit/cost ratio of .64 based on a one event 100 year frequency storm. This ratio likewise does not include the costs of the four dams which significantly lower the flood levels to be protected against by flood proofing.

It is apparent that justification of the costs of flood proofing cannot be conclusively made on the basis of benefits vs. costs alone. It is equally apparent that corrective measures are required to relieve the citizens of Allview Estates of the threat of loss of property.

The strategy recommended in this report for flood protection in Allview Estates is believed to be a reasonable compromise between a do nothing posture, at one extreme, and the "complete protection of Allview Estates at no cost or inconvenience to the residents", at the other extreme. This recommended solution is believed to be reasonable and proper in consideration of the degree of hazard, the feasibility of implementation, the total costs with respect to damage potential, and the other proper uses of County funds.

Elkridge

The study of Elkridge evaluates various alternatives for permanent flood protection for the citizens of Elkridge from floods of Deep Run. Although actual flood elevations, damages, and benefits were not computed for floods caused by the Patapsco River, it is thought that the measures suggested will

provide some protection from the Patapsco River due to the backwater flooding in the Elkridge area by flood proofing the flood prone dwellings.

The alternative measures investigated are listed below with brief explanation of the system and the reason for selection or rejection:

Flood Proofing - There are three suggested flood proofing stages for homes with basement and two for homes without basements.

For homes with basements, the stages are:

Stage 1. Do nothing when predicted flood elevations are ten feet or more below the first flood elevation.

Stage 2. Water proof basement, install sump pump, install foundation drains, and close basement openings when predicted flood elevations are from ten feet below to two feet below the first floor elevation.

Stage 3. Raise the home, abandon the basement, provide new utility room and regrade lawn when predicted flood elevations are from two feet below the first floor elevation to five feet above.

For homes without basements, the stages are:

State 1. Do nothing when predicted flood elevations are two feet more below the first floor elevation.

Stage 2. Raise the home and regrade the lawn when predicted floors elevations are from two feet below to five feet above the first flood elevation.

These suggested flood proofing measures will provide complete protection from the 100 year frequency storm on the Deep Run watershed and will also

provide a degree of protection from flooding due to the Patapsco River.

This alternative is considered to yield the most benefit for the cost and is a solution that can be implemented immediately without the delays associated with public works projects involving design, right of way acquisition and the bidding and award process.

Levees - Three levees were investigated as an alternative for providing flood protection. The first is near the intersection of Furnace Avenue and Race Road, the second is around the Church Road peninsula area, and the third is along Race Road near the western limit of study. The suggested levee systems would provide complete protection from the predicted 100 year storm floods of the Deep Run and an undetermined amount of protection from Patapsco River Floods. The cost of these systems, however, and the detrimental effects of having a levee near a home on the value of the home make these suggested levees much less a feasible solution when compared to other suggested measures offering the same degree of protection.

Minor Channel Improvements - The minor channel improvements suggested are for the area near Church Road because of the constriction in the Deep Run flood plain caused by the Church Road peninsula. The improvement would improve the hydraulic efficiency of the channel so that the predicted water surface elevation would be lowered to a safe level.

This alternative also includes some minor ditching to drain some of the swamp area. The residents of Elkridge area have complained of the excessive amounts of mosquitoes that breed in the standing water.

The legal implications of changing the physical Howard and Anne Arundel County boundary line should be investigated.

It has been assumed that Anne Arundel County would not contribute to the construction because there are no homes affected within Anne Arundel County, therefore, no benefits would be realized by Anne Arundel County.

This alternative is considered to be a feasible solution to the flooding problem in Elkridge due to Deep Run, but the benefits from this alternate alone are limited to only a small portion of the total flood prone area. This alternative is, therefore, considered to be only a partial solution to the problem and should be coordinated with other methods of flood control.

New Bridge at Furnace Avenue - This alternative was investigated to evaluate the benefits to be realized by improving the hydraulics of the inadequate bridge at Furnace Road. The new bridge and required channel and roadway construction would lower the water surface elevation sufficiently so that no flood proofing measures would be required within the area of the existing bridge backwater influence, however, the area affected by the backwater of the existing bridge is limited and only two dwellings would directly benefit from this major improvement.

The fact that a new bridge would assure continuous access across Deep Run, which is predicted to flood the existing bridge during the 100 year frequency design storm on the Deep Run watershed, is a benefit to the area at large.

The total benefits to Howard County as well as Anne Arundel County is beyond the scope of this study, however, in view of the limited number of stream crossings in the area, this new bridge may be justified on the basis of greater need than the immediate flooding effects in Elkridge.

The direct benefit to the residents of Elkridge, however, is minimal and, therefore, this major improvement is not recommended as a feasible solution to the flooding problems in Elkridge. It is believed equal protection of significantly less cost can be provided to the two affected dwellings by flood proofing measures.

Cleaning the Overbanks - Field observation of the Deep Run flood plains indicated that heavy undergrowth and numerous large trees were undoubtedly restricting the flow of flood waters and causing high water surface elevation. In an effort to economically reduce the flood water elevation of the 100 year frequency storm, a determination of the water surface profile with the overbank areas of Deep Run cleared of undergrowth was made.

The results of this evaluation indicated that a reduction in water depth of as much as 1.5 feet should be realized by clearing alone.

It is, therefore, recommended that best advantage of this system of flood control can be gained when used in conjunction with other feasible methods such as reduced flood proofing and spot channelization in strategic areas of the flood plain. Utilization of this strategy, however, will require a perpetual program of periodic maintenance in order to maintain the hydraulic characteristics of the flood plain. This program could be implemented along with other compatible uses of the area such as usable open space for ball fields, picnicking, etc. so long as periodic inundation was anticipated in the proposed uses.

On the premise that Howard County has an obligation, either moral or legal, to protect the homes in the Elkridge Area from the predicted flood

levels of a one-hundred year frequency storm with ultimate development, and with reference to the discussions elsewhere in this report relative to alternative measures evaluated, it is recommended that the Deep Run flood plain be cleared of all brush and selectively cleared of trees to improve the hydraulics from the westerly study limit to the Patapsco River. It is further recommended that minor channel improvements with drain ditching near the Church Road peninsual be constructed to lower the water surface elevation predicted by the one hundred year frequency storm with ultimate development. Those dwellings that will remain subject to flooding in spite of the recommended channel improvements are recommended to be flood proofed as described in the flood proofing section of this report.

It is believed that the combination of flood proofing and minor channel improvements, will provide complete protection for dwellings within the study area from the predicted flood elevation of Deep Run due to the one hundred year frequency storm with ultimate development. The Consultant also recommends that the flood warning system currently budgeted in the Howard County Capital Budget be implemented to provide for the safety of the Elkridge residents until the recommended physical improvements can be constructed and to provide warning to the residents in the event of floods caused by storms of greater intensity and duration that the 100 year frequency storm.

In recognition that the construction of the flood proofing required in several of the homes will cause unusual hardship and inconvenience to the occupants and in further recognition of the stated preference of nearly all the area residents to remain in the area in spite of the hazards, it is

suggested that Howard County offer to provide temporary suitable living space while major flood proofing construction is underway. A precedent for this approach was in evidence immediately after Tropical Storm Agnes receeded in the placement of several trailers which were occupied while owners repaired and restored their homes. A similar plan could be initiated to minimize the inconvenience of major flood proofing. This option is recommended to be made available only for those dwellings which are predicted to be severely flooded and require abandonment of basements and the raising of the home in elevation.

It is noted that Howard County has established a revolving loan fund for the sole purpose of making low interest loans available to property owners whose improvements are within the 100 year ultimate development flood plain plus two (2) feet. This fund is intended exclusively for flood proofing of flood threatened homes and is available in maximum amounts of $6,000. Present requirements for eligibility stipulate that the property owner must have flood insurance. In this regard, it is recommended that the owners of all homes within the influence of the predicted 100 year frequency storm be required to purchase flood insurance in an amount commensurate with the level of damage possible as a condition of providing flood proofing.

The total cost of these recommended improvements, exclusive of flood insurance and trailer rental is estimated as follows:

Cleaning of the Overbanks	$172,500
Flood Proofing of dwellings as required	98,360
Minor channel improvement and drain ditching	132,600
TOTAL	$403,460

Recognizing that the work required to prepare plans, acquire rights-of-way, obtain permits, receive bids and complete construction of the channel will require probably two years; it is recommended that the flood proofing measures which will provide immediate complete protection and require cooperation of only the individual owners who will benefit, be initiated immediately.

As an aid to establishing a program of total protection from the 100 year frequency storm on the Deep Run watershed within a reasonable time, the following logical construction sequence is suggested based on a two-year program.

FIRST YEAR

Flood proof all dwellings required	$ 98,360
Channel modifications - Engineering	10,200
Cleaning overbanks - Engineering	7,500
	$116,060

SECOND YEAR

Channel Modifications	$122,400
Cleaning Overbanks	165,000
	$287,400
10% Constr. Escal.	28,700
	$316,100

The total damage estimated to result from one one hundred year storm on Deep Run is $82,750. The cost of complete flood proofing is estimated at $238,860 with a resultant benefit/cost ratio of .35. Should the same ratio be calculated on the basis of two such storms, the ratio would increase to .70, therefore, the benefit/cost ratio developed above is not a true measure of the economic feasibility of work. This ratio is intended only as a comparative tool in this report.

As reflected in the chart following, the total cost of flood protection using flood proofing in conjunction with cleaning the overbanks is:

Cleaning Overbanks	$172,500
Flood proofing	166,940
TOTAL	$339,940

The benefit/cost ratio based on one, one hundred year storm is, therefore, .24.

Finally, the cost of the recommended program of improvements is:

Cleaning Overbanks	$172,500
Channel Modifications	132,600
Flood Proofing	98,360
TOTAL	$403,460

The benefit/cost ratio based on one, one hundred year storm is, therefore, .21.

Although the benefit/cost ratio of the recommended program is approximately two thirds the flood proofing alone alternative, the recommended plan will provide for a greater degree of safety to the residents. Review of the pertinent exhibits indicates that the recommended plan will not only protect the dwellings and contents from damage, but by reducing the flood level as much as five feet in some areas, access to the area for emergency vehicles in the event of fire or injury is significantly improved. No attempt has been made to assign a value to this benefit, but it is believed this condition heavily favors the recommended program.

MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
REGIONAL AND METROPOLITAN DISTRICTS IN MONTGOMERY AND PRINCE GEORGE'S COUNTIES MARYLAND

Regional Headquarters Building
8787 Georgia Avenue
Silver Spring, Maryland 20907

589-1480
Area Code 301

DEPT. OF STATE PLANNING
RECEIVED
DEC 10 1975
REVIEWED
ANSWERED

MEMORANDUM 12/5/75

To: Donald E. Brand,
Chief, Flood Disaster Coordination Office
Department of State Planning

Via: John S. Hewins, Information & Research Officer

From: E. G. Murphy, Regional Environmental Planner

Subject: Completion Report

This report is being submitted to the Flood Disaster Coordination Office of the Department of State Planning as evidence of the completion of all work under contract FDPG-05. The original terms of this contract covered a 12-month period from July 10, 1973 to July 9, 1974. The time limit was twice extended and a completion report was delayed pending the publication of the final report for the entire project.

Throughout the period, we have submitted progress reports and have indicated the extent of work completed and the costs involved. The final accounting of M-NCPPC costs for work performed by staff and consultants on work items C-4 and C-5 of the scope of work (the items for which FDCO paid $6,948) shows that these incurred expenses were at least $22,137.80. The breakdown of staff time (based on hours worked at rates reported by each employee on the tasks) is as follows:

Task C-4	Task C-5
1,454.5 hours, $7,504.30	529.5 hours, $7,639.24

The disparity in rates is due primarily to the large amount of drafting and technical aid employed in identifying floodplains and problem areas versus the cost of higher paid specialists who worked on Task C-5 (preparing alternative solutions).

In addition to staff time, almost $7,000 was paid to our consultants, Roy F. Weston, Inc., for work they performed relative to these two tasks. We have submitted to you, previously, copies of draft reports by the consultants on Alternative Solutions and the draft final report on the Comprehensive Storm Water Management Study for the Anacostia River Basin. This final report is currently "in press." When the published report is returned from the printer, ten (10) copies will be sent to your office.

As was noted in previous progress reports, the majority of the discussion of alternative solutions (Task C-5) is contained in this final report. The staff and consultant work leading up to the report involved a great deal of work with computer modeling to determine peak flows and floodwater elevations for different storm frequencies (2, 5, 10, 25, 50 and 100-year). The staff work involving identification of problem areas (Task C-4) included the compilation, preparation, plotting and mapping of numerous land use variables affecting run-off under both existing and future (Master Plan) conditions. The drafting of floodplain maps based on delineations from computer data, required much staff effort, as well. A set of 75 floodplain maps of the study areas, the Anacostia River Basin in Montgomery and Prince George's Counties, was prepared on 1" = 200' scale topographic base maps. A set of these maps will be forwarded to your office. (Copies were sent earlier to the Water Resources Administration of DNR.) Since the products of this study, reports and maps,have been completed and will soon be forwarded in final form to FDCO, it is felt that further reiteration of work performed and study findings is unnecessary. To separate tasks C-4 and C-5 from the overall study also would be difficult. Therefore, the following abstract from the final report is offered as the most succinct description of work performed which was financed in part by the grant from FDCO.

ABSTRACT: A general storm water management strategy was developed for the Anacostia watershed to maintain peak flood flows at their present levels (or lower, where feasible) with minimum effect on the stream valley environment. Testing and selection of alternative solutions to historic and predictive flooding problems was performed using a hydrologic model of the Anacostia watershed. Research was done to determine the effect of on-site detention structures and land use mixes on stream hydrology.

The proposed storm water management strategy includes the use of on-site detention, in-stream impoundments, and stream valley park acquisition. An estimate of costs and suggested actions for implementing the storm water management strategy is presented.

TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC.

FINAL REPORT

June, 1973 - October, 1975

Ernest (Gene) Combs, Jr.
Flood Management Coordinator

TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC.

DEC 1 2 1975

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TECHNICAL ASSISTANCE TO COUNTIES AND LOCAL MUNICIPALITIES:

The Flood Management Coordinator and Executive Director of the Tri-County Council for Western Maryland met with town officials of Boonsboro and discussed plans to expand the present town park. It was recognized that the addition would create more runoff, but as the entire area below the park is open pasture, it appeared that no real physical damage would result from flooding. Staff of the Western Maryland Office of the Department of State Planning are now developing preliminary plans for development of the park.

A review of the local Comprehensive Plans was conducted to see what developed and proposed development might affect the Flood Insurance Program. Mainly, this involved location of water lines and the identification of the separate and combination sewer systems and to see if there were any types of storm water management techniques being practiced or proposed.

There were many meetings held with each county and municipalities in preparing flood insurance applications. The State Coordinator, Robert Rauch, and the Coordinator worked hard to include every area in Western Maryland in the National Flood Insurance Program. Of the three counties and 24 municipalities, two counties and 20 municipalities are now eligible to buy flood insurance. A chart accompanies this report to better explain the status of each county and municipality. Two municipalities, Grantsville and Luke, are not participating. Grantsville has no flood prone areas, and in Luke, all areas subjected to flooding are either occupied by, or owned by the Westvaco Corporation.

Local officials in these municipalities feel they have adequate coverage. Garrett County has applied for eligibility, but does not have an adequate permit procedure to make them eligible.. The municipalities of Deer Park and Smithsburg chose not to participate.

The Garrett County Planning Commission hired an assistant planner whose prime responsibility is to complete flood insurance applications. The Coordinator has met several times with Mr. Jim O'Neill, Assistant Planner, in discussing the National Flood Insurance Program. Also, the Coordinator has remained in frequent contact with Mr. O'Neill in case of any questions or complications in completing an application form. As of this time, all municipalities, except one, are eligible to apply for flood insurance and are participating in the emergency phase of the program.

A representative of the Farmers Home Administration contacted the Coordinator requesting information on Garrett County's status in the National Flood Insurance Program. It was explained to him that Garrett County's application has been filed, but there has been considerable delay because of the permit system the County uses. Garrett County has no actual building permit system. Inspection of new homes is the responsibility of the County Health Inspector. The rest of the application is sufficient. Therefore, if federal officials find the permit system adequate, the County will become eligible to buy flood insurance.

Assistance was given to Mr. William Vogtman, Town Clerk of Frostburg. There was considerable confusion over the notification

of the Town's eligibility because at the same time the City received its notice of eligibility in the program, it also received a letter saying they should consider applying for flood insurance. Following several phone calls to the State Coordinator, it was learned the second letter was just an oversight and to disregard it and that Frostburg was participating in the National Flood Insurance Program.

Mr. Travis of the Cumberland Urban Renewal Agency asked for assistance in locating a map identifying the flood prone areas of Cumberland. Also, Mr. Travis was concerned about the status of Cumberland and their involvement with the National Flood Insurance Program. These concerns could prove to be very important in the future if a proposed project was to be located in a flood prone area. A colored map locating Cumberland's flood prone areas was supplied, as well as informing Mr. Travis that Cumberland is presently participating in the emergency phase of the National Flood Insurance Program.

The Coordinator received notice from the Water Resources Administration about a hearing on a permit to build a home in the flood plain of George's Creek below Frostburg. He was familiar with the area because several months previous, a new home had been damaged by flash flooding (picture enclosed). The home owner and a local insurance agent had notified the Coordinator requesting information about buying flood insurance. The permit was approved, but restrictions were placed upon construction of the dwelling. These restrictions were: first floor living level must be above the 100-year flood level, no grading or fill will be

permitted, no storm wall will be permitted, and finally, a fence at the rear of the property will have to be removed.

On August 25-27, 1975, the Coordinator attended a seminar at Pennsylvania State University (see enclosure). The title of the seminar was "Hydrologic and Hydraulic Analysis for Small Urban and Rural Watersheds". The program proved to be very educational. The methods of predicting quantities of runoff from varying frequency of storms should prove helpful in the development of any storm water management reports.

The Coordinator has been responsible for attending Water Resources Administration hearings dealing with waterway obstructions or construction which takes place in the 50-year floodplain. Twenty such hearings have been attended since June, 1973. Several times, comments on the proposed permit were offered and many of the sites where the work was to take place were visited.

The Coordinator assisted the Director of the Allegany County Health Department. A home was to be erected in an area where flooding could occur. The Health Officer was concerned about health conditions due to flooding and needed assistance in finding out if the home would be built in a floodplain area. Being familiar with the area, and after checking with the Allegany County Engineering Department on elevations, the Flood Management Coordinator informed the Health Officer that the area was reasonably safe from flooding.

Assistance was given to the Town of Friendsville on a flood control project. A councilman requested attendance at a Town Council meeting in Friendsville to review a flood control project

previously completed by the Army Corps of Engineers. Over a period of years, the project had deteriorated and the Town desired to contact the Corps to learn of their intentions. The regional Corps representative was contacted and it was learned that they were planning to return to Friendsville and restore the project to its original condition. This information was relayed to the Friendsville Council and efforts have progressed.

The Town of Smithsburg had problems with drainage of storm water runoff from a nearby school. The situation is occurring in an area where the contour of the land is relatively flat. A small storm wall, in a person's yard, acts as the impounding structure. This does not create any major problems, but getting the water to a nearby stream for drainage is virtually impossible due to the lack of slope. The Town has contracted an engineering firm to make a study. The School Board has been very cooperative in trying to alleviate the problem of runoff and some improvement has been made. Now a solution to draining the collected water is the major concern. The Coordinator and Tri-County Council's Chief of Grants are working closely with town officials and engineers in trying to solve the problem.

The Flood Management Coordinator has been active on the Allegany County Drainage Basin Committee Task Force. Several meetings have been held to discuss various methods to control storm water runoff. Recommendations will be forwarded to the County Commissioners for approval and the development of a storm water management program. Mr. Robert Norton, State Water Resources Administration representative, appeared before the Task Force to

discuss the State's role in storm water runoff and their goals and objectives. The State has also recognized the need for storm water management necessitated by the continual development in potentially hazardous areas.

A draft copy of Westernport's Storm Water Management Plan has been submitted to the Western Maryland Office of the Department of State Planning for review for inclusion in their Comprehensive Plan. A final copy of this plan will be forwarded to the Flood Disaster Control Office for their review. If other objectives under the Flood Management Program are achieved and the program closed out, a copy of the draft can be received upon request from Mr. Michael Giblin, Department of State Planning, Suite 510, Algonquin Motor Inn, Cumberland, Md. 21502 or by phoning 301-722-6885.

Technical assistance was provided the Town of Clear Spring. Following heavy rains, the Town was experiencing drainage problems and minor flooding. The newly constructed high school seemed to be the stem of the problem. The non-water absorbing surfaces were causing excess amounts of storm water runoff. After several on-site investigations and meetings with Town councilmen and contractors, it was decided to retain a consultant to develop a solution for the problem. The Town of Clear Spring is now on the project list of the Tri-County Council and funds are being obtained to install a sewer and drainage system.

The Town of Clear Spring is still experiencing many problems due to excessive runoff and poor drainage. The Tri-County Council put this in their project package to try and help get monies to finance the construction. A narrative statement from the

engineering firm has been included to better clarify the project.

As a member of the Tri-County Council's Natural Resources Committee, the Coordinator has been active in giving civil engineering expertise and making contacts with persons involved in this type of work. Of major concern to the Natural Resources Committee has been the issue of strip mining and its effects in Western Maryland. The Flood Management Coordinator, in the past, had been in contact with several members of the region's Land Reclamation Committee. He assisted Mrs. Sollinger (Chairperson, Natural Resources Committee) in arranging for speakers representing various aspects of strip mining to meet with the Committee members. Speakers included: Harry Buckley, Director of the Bureau of Mines for Western Maryland; Bob Creter and Steve Layton, representatives from the Water Resources Administration; Fred Bagley, representative from the State Forestry Department; Doug Valentine, Soil Conservation District of Allegany County; John Reckner, Soil Conservation District of Garrett County; and Dr. Wayne Spiggle and Bob Miller, Citizens Coalition on Strip Mining. Representatives from the Coal Miners Association were invited, but did not attend. It was important for Committee Members to see a two-sided debate. With such a varied group of professionals present, the meeting was successful. Since the meeting, the Flood Management Coordinator has accompanied the Land Reclamation Committee on an actual on-site investigation of strip mines. Mr. Layton, at a return presentation, extended an invitation to the entire Natural Resources Committee to visit some strip mine sites to see first-hand what is being done. Other work involved with the

OMMODATIONS

person is responsible for securing his own housing accommoda-
. We have been advised that lodging accommodations are not
able at the Nittany Lion Inn adjacent to the conference center.
ever, a list of nearby hotels and motels will be sent upon receipt
egistration. Registrants should make reservations directly with
otel or motel of their choice.

ures and practical workshops will be held in the J. Orvis Keller
ference Center on campus.

VEL DIRECTIONS

ailed travel directions will be sent upon receipt of registration.

ERAL INFORMATION

stration details will be sent upon receipt of the registration form.
e during the seminars will be informal (sport shirts and slacks).

GRAM SUPPORT

program, a continuing education service of The Pennsylvania
University, is made possible by the registration fee and the
sylvania Legislature's annual appropriation to the University.

INAR STAFF

Aron – Associate Professor of Civil Engineering, Penn State;
minar Cochairman

ur C. Miller – Assistant Professor of Civil Engineering, Penn
ate, Seminar Cochairman

mas Rachford – Senior Engineer, Gannett, Fleming, Corddry
d Carpenter, Inc.

les A. Lindsey – Assistant Director, Technical Review Branch,
deral Flood Insurance Program, HUD

d F. Lakatos – Graduate Student, Civil Engineering, Penn State

PROGRAM SEMINAR I

Monday, August 25, 1975

12:30 p.m.	Registration for Seminar I
1:00	Welcome (Aron)
1:05	Theory of Flood Frequency Analysis (Aron)
2.00	Example on Plotting and Calculating Flood Frequencies (Aron)
2:40	Coffee Break
3:00	Mini-Exvan Computer Program (Aron)
3:30	Uncertainties in Frequency Predictions (Aron)
4:15	Flood Peak Estimates on Ungaged Watersheds
6:00	Picnic at Penn's Cave

Tuesday, August 26

8:15 a.m.	Flood Plain Delineation
9:00	Flood Plain Regulations and Insurance Policy (Lindsey)
9:30	Discussion Session on Flood Plain Delineation Regulations and Insurance
10:00	Coffee Break
10:20	Rainfall-Duration Frequency Relationships for Pennsylvania (Rachford)
1:00	Unit Hydrograph Derivation and Application (Aron)
12:00 noon	Lunch (on your own)
1:15 p.m.	Synthetic Hydrograph Generation (Rachford)
2:15	Example of Urbanization Effect on Runoff Hydrograph (Aron)
3:00	Coffee Break
3:20	Methods to Reduce Urban Flood Peaks (Aron)
4:00	Management of Urbanizing Watersheds (Rachford)
5:30	Dinner (on your own)

Wednesday, August 27

8:15 a.m.	Runoff Simulation Techniques (Aron)
9:00	PSU Urban Runoff Model (Aron)
10.00	Coffee Break
10:20	Discussion of Various Urban Runoff Models (Lakatos)
11:30	Review and Discussion of Hydrology Seminar (Aron)
12:00 noon	Lunch (on your own)

COLLECTION, REVIEW AND DISSEMINATION OF POLICIES AND REGULATIONS:

One successful way to evaluate local needs and problems is to review local permit procedures. This was accomplished by collecting available subdivision regulations, zoning regulations, and other permits utilized by the jurisdictions. A listing of each county and municipality and the status of their permit procedures was compiled and forwarded to Lewis Hecht of the Water Resources Administration and Mary Ann Fleetwood of the Department of State Planning. For further information on permits in Western Maryland, the Tri-County Council library has copies of all available materials in their office.

Reviewed a copy of House Bill #895. This Bill deals with Articles 8-905 and 8-906 of the Natural Resources Bill, entitled Water and Water Resources - Flood Control. A clearer definition of terms such as flood or flooding, and floodplain was suggested. The Bill specifically states that the General Assembly acknowledges the fact of reoccurring floods in certain areas, which cause major damage in someway or another. Thus, the General Assembly declared that it is the intent of the State to guide development of the floodplains.

Reviewed a copy of Senate Bill #3062. This Bill deals with amendments to the Disaster Relief Act of 1974. The Bill discusses to what extent relief could be provided by the Emergency Preparedness Office after a major disaster. Relief was discussed in every form, i.e., money, food, medicine, physical work, and debris removal.

Several municipalities in the Western Maryland region require a permit system for control of development in the floodplains before their area would be eligible to apply for flood insurance. Many areas have developed subdivision regulations with emphasis on the environment and floodplains. These regulations meet the requirements of the National Flood Insurance Program and adoption of the regulations by municipalities has been successful. Several municipalities in Garrett and Washington Counties have adopted and are enforcing the regulations at the present time. Copies of the new regulations are on file in the Tri-County Council office.

Some of the regulatory measures enforced in Western Maryland and on file at the Tri-County Council office are as follows: 1) Allegany County Health Department regulations on water supply and sewerage systems for subdivisions; 2) new water and stream survey booklet on flow records in streams after Hurricane Agnes prepared by the United States Geological Survey; 3) several regulations which are statewide and are enforced by the Water Resources Administration. They provided information on local floodplain management, floodplain area management and floodproofing regulations. All these guides, plus many other informational pamphlets and fliers, were received and distributed.

The Army Corps of Engineers was contacted in order to acquire a booklet entitled "Flood-Proofing Regulations". This guide has proved very helpful when trying to explain proper construction methods for homes to be built in the floodplain or when present structures need to be floodproofed. The guide booklets have been

distributed to representatives of the Home Builders Association, bank representatives, and local officials who are responsible for enforcing the local permit systems. The Home Builders Association has shown considerable interest in the National Flood Insurance Program. They are particularly concerned with new construction methods and materials needed when constructing in an area subject to flooding.

A complete file of newspaper articles pertaining to the Flood Insurance Program and including pertinent articles and scenes of flooding and notification of flood insurance policies are on file at the Tri-County Council office and are available upon request.

Natural Resources Committee has been the compiling of short reports identifying all acid mine drainage studies done in Western Maryland. A review of the Army Corps of Engineers' "Acid Mine Drainage Study for the Appalachian Region" was conducted and the information discussed with the Committee.

Several meetings of the Land Reclamation Committee were attended. These meetings are held monthly. Following a submittal by a mining company for expansion of land, an investigating team goes into the field and researches all aspects, good and bad. The final step is to hold a public hearing to discuss the proposals and then approve or reject the application. Plans were made to accompany the investigating team into the field to better understand the procedure. The Coordinator has accompanied the investigating team and seen how a permit goes through the complete procedure.

Following several days of heavy rainfall, home owners from a section of the City of Cumberland called the Coordinator about flooding problems they were experiencing. There seemed to be a question between the home owners and a local insurance agent about purchasing flood insurance. The Coordinator visited the insurance agent and discussed the program briefly. The agent seemed very well informed. The agent expressed his knowledge of the program and firm support. The Coordinator offered his assistance if a problem should arise.

INVESTIGATION OF SOURCES OF FINANCIAL AID:

The "Maryland Register" was reviewed on a regular basis. This Register is received biweekly and contains all the proposed, adopted, enacted and other types of legislation. It also covers contracts which are awarded for various projects throughout the State. The Register has proved to be a very helpful means by which to keep up with legislative action and contract monies awarded.

Several communities in Western Maryland, Smithsburg, Clear Spring, and Westernport, have experienced storm water runoff and drainage problems. There has been a continual search for loans and/or grants for which the towns may apply for monies.

A review of the Overall Program Design (OPD) of the three counties was conducted to see if any programs were directly related to storm water management. The review revealed that none of the counties had a program eligible for funding at this time.

The Flood Management Coordinator has been working closely with the Chief of Grants of the Tri-County Council. The Flood Management Program has been drawing to a close. Therefore, the Coordinator has been working in other fields of the Council. One of the most important roles of the grants division is to prepare the 214 (construction) Project Package. The applicant applies for a certain allotment of money appropriated by the Appalachian Regional Commission to areas in the Appalachian region. This year's allocation was in the vicinity of $3.1 million. Several of the storm drainage projects indirectly relate to the Flood Insurance Program.

The Coordinator has been contacted by several municipalities who have experienced drainage and runoff problems following heavy rains. Grant research was conducted to determine possible funding sources. The Farmers Home Administration seemed to be the most logical agency to work with. Mayor Wills of Westernport and Mayor Brenneman of Accident were contacted about the grant and several questions were asked. After contacting the Farmers Home Administration, it was learned the priority list was set up with water and sewer projects being first. Although no grants were available, loan monies were available and the respective towns were notified. The towns had no response to wanting a loan, both were in the same situation, needing a grant to be able to do their respective projects.

COORDINATION ... STATE AND LOCAL:

The Allegany County Planning Department was assisted in delineating the floodplain areas in the County. A complete set of aerial photos with detailed soil groups identified were used to locate floodplain areas. After locating the floodplain on the aerial photos, the areas were transferred to detailed county tax maps. The final product resulted in detailed identification of floodplain areas on tax maps. This information is used when issuing building permits. By locating a proposed construction site on the tax maps, a quick decision can be made by officials whether or not it is to be in a potential flood area.

An attempt to assist Washington County develop "slope density" regulations was unsuccessful. A clear definition of slope density was never established. The International City Management Association; the State Department of Agriculture; the Maryland Chapter of the American Institute of Planners; and American Society of Planning Officials were all contacted, but were unfamiliar with the term. However, the Coordinator worked with county planners in identifying steep slopes and floodplains on Soil Conservation Service maps and then piecing these together to match existing land use maps. These maps could then be overlayed on existing colored, delineated zoning maps and the critical areas could be quickly identified. These maps are now being used in determining a critical area.

There is on file with the Council's Graphics Illustrator, copies of maps showing the floodplains of the three counties. Also, overlay sheets of watersheds are available. All available

copies of Flood Hazard Boundary maps are also on file. These maps are all available at the Tri-County Council office.

Recently, information was received from a local insurance company on the status of Flood Hazard Boundary maps and eligibility in the program. A follow-up attempt to acquire all available Flood Hazard Boundary maps, published by United States Fidelity and Guarantee, has been made. It is hoped that at least two copies of each map will be sent. Then, a copy can be kept on file and the other sent to the respective communities. It is urgent that each community have their copy, as flood insurance must be applied for within one year after that community's flood hazard areas have been identified.

The Coordinator keeps Mike Kilpatric (contact with the Department of Economic and Community Development) informed as to the status of counties and municipalities in regard to the National Flood Insurance Program. Mr. Kilpatric has been helpful in contacting areas which are eligible to apply for flood insurance and have not done so.

The Coordinator reviewed the "Final State Flood Recovery and Rehabilitation" report. This report proved beneficial in tying together what is being done in Western Maryland and the rest of the State. Although the ultimate goal is to have proper flood-plain management techniques and to assist areas in becoming eligible for flood insurance, Western Maryland has a seasonal problem due to the higher elevations and mountainous terrain.

Another factor of major concern in the Western Maryland region has been the quality of its water. There have been several

proposals for correcting the problem. The Coordinator and Chief of Grants met with Henry Schlenker of Touche-Ross & Co. Consultants, who were doing a survey for the Water Committee on Quality. The various problems of pollution were disucssed. There has been no further correspondence.

On Monday, September 29, the Coordinator met with City of Cumberland officials, Col. Patterson, George Scarlett; Jack Stamm, Dalton, Dalton, Little and Newport Consultants; Dave Thomas, Regional Office of HUD; and E. S. Delbrook, Allegany County Soil Conservation Service. The meeting concerned City of Cumberland's participation in the regular phase of the National Flood Insurance Program. The flood delineation study has been contracted to Dalton, Dalton, Little and Newport of Baltimore. The consultants explained that the study would require approximately two years to complete.

The first meeting was an orientation meeting. Completion dates for each phase of the study are: September, 1975, orientation meeting; June, 1977, a draft copy completed; then a six-month review period for engineers from the consulting firm and publication of the report; then a final copy will be sent to Cumberland; and finally Cumberland officials will have one year to adopt recommended regulations to comply with the second phase (regular phase) of the National Flood Insurance Program.

This study will include detailed engineering analysis of approximately twelve miles of streams in the area and another five miles of general engineering on other streams. After detailed mapping of the floodplains, actuarial rates for insurance can be established.

The Coordinator attended a meeting at the Soil Conservation Service on the hydrology of watersheds. They were making available for purchase a computer program for computing storm water runoff from watersheds. Letters and supplemental information was sent to all concerned persons in the region to see if the program was purchased, if it could be used effectively in local planning. There was no response, so the idea of purchasing the computer program was abandoned.

A-95 CLEARINGHOUSE:

The Coordinator was responsible for all A-95 reviews to the Council. He has been reviewing many A-95 State Clearinghouse projects. For a complete list of all (approximately 100) A-95 reviews conducted, contact the Tri-County Council.

INFORMATION AND EDUCATION:

The Coordinator planned a National Flood Insurance Seminar for the tri-county area. Primary speakers included Mr. Walt Pearson, Regional Specialist from HUD, and Mr. Bob Rauch, State Coordinator for the National Flood Insurance Program. Mr. John McGuire represented the bankers and Mr. Kermit Failinger represented the Western Maryland Home Builders Association. Also, the local independent insurance agents were able to get Mr. Hugh Mallon, Managing Superintendent of the National Flood Insurance Program from USF&G, to represent the insurance companies. The Coordinator explained his role and acted as mediator. A good cross section of people did attend and this allowed for a wide spread discussion of the National Flood Insurance Program.

Efforts were made to get a copy of a slide show which depicts the problems of erosion and siltation. It showed how local water supplies and natural drainage channels can be drastically affected by siltation. This would have been helpful in presenting information to citizens concerned with erosion and siltation caused by storm water runoff. There has been no success, as of yet, in getting a copy of the slides.

A local television station interviewed the Coordinator. The program was then shown on the local station, as a means to inform citizens of the importance of the Flood Insurance Program. As a result, several citizens contacted the office and asked questions such as: Where do I get flood insurance? How do I apply for flood insurance? And other basic questions concerning the overall Flood Insurance Program.

The Flood Management Coordinator regularly attended meetings of the Allegany-Garrett Municipal League. By attending these meetings, the Coordinator has been able to maintain good rapport with the local elected officials in the two westernmost counties.

A factor which has proved helpful in explaining the Flood Insurance Program to officials, organizations and individuals has been the use of a slide presentation. Numerous slides depicting aspects of flooding have been taken. Fortunately, there has been no major floods in the Western Maryland region since the job of Flood Management Coordinator started. This fact has had an overall dampening effect on "selling" flood insurance. Once the disaster is over, people tend to forget that it can happen again. Also, because of a no flooding situation, the slides only show where floodplain areas are located, and in some incidences proper and improper uses of the floodplain. This slide program, along with a narrative, is available to anyone who could use the presentation. The slide program consists of approximately 35 slides showing the location of flood control structures, newspaper coverage, and actual floodplains within the counties and several municipalities.

The entire staff of the Tri-County Council met with the Washington County Municipal League and each person gave a short synopsis of his program. Following the meeting, several municipal leaders approached the Coordinator with questions on the program. Their questions were answered and follow-up informational material was sent to the municipalities. The Coordinator made plans to attend town council meetings hoping to clarify any questions officials might have.

At the request of the county Civil Defense Directors, the Coordinator and State Coordinator were guest speakers at their August meeting. Both speakers emphasized the important role the Civil Defense could play in their respective counties with alert and speedy communications to officials of responding emergency units such as fire departments, rescue units, and even the citizens themselves. All the directors expressed concern and interest, and informational packets on the National Flood Insurance Program were sent to each director. Presently in the counties, a centralized communications system is being established in the Civil Defense headquarters. In case of national emergency, particularly from the flooding standpoint, the Civil Defense will be able to serve the counties.

The Coordinator was a guest speaker at an Independent Insurance Agents luncheon. He had spoken before this group in the past and has kept them informed of happenings in the National Flood Insurance Program. The agents are particularly interested in the program status of local counties and municipalities. Overall, the program itself has been very successful in Western Maryland, but there is no record as to the actual number of policies sold. The Flood Coordinator received information on flood insurance rates and a policies guide. This material has been ordered.

Newspapers have been a good source of data. In the Washington Post, an article appeared dealing with erosion and siltation of a water storage basin in northern Virginia. After several telephone calls, a letter was sent to the gentleman who had made the study in

hopes of acquiring a copy of the slides he had taken as well as results and comments on the study. The Coordinator felt this would be helpful in discussing similar problems with local officials. So far, there has been no response on getting the information. The newspaper not only provides a means of contact to other people, but a good means of publicizing information on the National Flood Insurance Program. Since the publishing of a local article, there have been several calls from local officials and organizations, and as a result, there is continued progress on applications.

ADDITIONAL SERVICES:

One of the requirements of the Tri-County Council is to submit an overall plan to the Appalachian Regional Commission. This plan, the Appalachian Maryland Development Plan, must be done in order to be eligible for ARC grant monies. The Coordinator assisted the Council's Planner with the water, sewer, and solid waste section of the Plan.

The Coordinator has been working with the Council's Chief of Grants on the Highlands Set-Aside Funds project. This money is set aside by the Appalachian Regional Commission to assist Appalachian Highland areas in developing historical sites, recreation, and tourism to benefit the people of that region. The areas of Garrett and Allegany Counties are eligible for these monies. Seven proposals were submitted and represented approximately $800,000.

Another meeting attended by the Coordinator was the Allegany County Economic Summit Meeting. The meeting was called because of the alarming percent of unemployed in Allegany County. Among those attending were Governor Mandel, Congressman Byron, and Senator Mathias. Local officials then explained to the State officials what they felt was needed in order to improve the economic conditions in Allegany County. The primary concern was on transportation routes, especially the urgent need to complete the National Freeway and Routes 51 and 220, which are main arteries for local industrial sites. Industrial representatives also expressed their concern for improved roads. Other officials speaking were the Mayor of Cumberland and the Allegany County

Economic Development representative. In summary, the State officials said they agreed the route improvements and completion were necessary, but like other projects of this type, they take time. The Tri-County Council attended only as listeners and to offer assistance if they could be of any help during the recession.

The Coordinator also attended the follow-up Economic Summit Meeting. State and local officials were present to further discuss the economic situation in Allegany County. State officials responded to initial comments by local officials from the first meeting some months before. Major topics included the designation of the Route 48 Freeway as an interstate highway and the passing of a bill on the sulfur content of coal. Local officials feel these two items are a necessity to improve the economic situation of the region. State officials agreed to push these two items in particular along and similar meetings of officials are planned for the future.

Assistance was given the Health Planning Council on an environmental impact statement on a construction project. Mr. Bill Miller called the Coordinator requesting information on who to contact about bird flight patterns in Cumberland. The Health Planning Council is planning to construct a tower and this information was needed in the environmental statement. He was put in contact with the person he needed to talk to.

The Coordinator had been gradually working into a grantsmanship role in the Tri-County Council. The Flood Coordinator and another grantsman worked diligently on the Title X Job Opportunities Project Package. There is some relationship between the Flood

Insurance Program and some of the projects.

The Coordinator has been working very close with Mr. Berry, Chief of Grants, on an Enterprise Development grant. This grant deals with funding for engineering reports for proposed areas to develop economic potential.

MARYLAND DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

State of Maryland
Department of Economic & Community Development
Office of the Secretary
2525 Riva Road, Annapolis, Maryland 21401 • 301—267-5176

Marvin Mandel
Governor

Joseph G. Anastasi
Secretary

DEPT. OF STATE PLANNING
RECEIVED
DEC 16 1975
REVIEWED
ANSWERED

December 11, 1975

Mr. Donald E. Brand, Chief
Flood Disaster Coordination Office
Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

RE: Project No. FDPG - 07

Dear Don:

This final report focuses on the activity of the field staff in carrying out the work program designed under this grant for the Department of Economic and Community Development. It should be noted that the program gave special emphasis to helping local jurisdictions to develop long range economic programs. By contrast, the work programs of DSP and DNR were to be more directly related to flood and disaster programs. The report follows the eight-point outline of the work program itself. Under each appear examples of how the field staff accomplished its program.

From its beginning the program was linked to the establishment of a State-wide economic development planning process for the State of Maryland. A revised version of "An Economic Development Planning Process for Maryland," acknowledges the work of the field staff in "providing a necessary touch of realism to the planners" and of insuring "The involvement of local political jurisdictions in the process." It further notes that "A sub-contract with the Maryland Department of State Planning, monitored by Donald E. Brand, Chief, Flood Disaster Coordination Office, and funded by EDA, made possible the recruitment of the field staff to work with individual counties to improve their economic development planning and action programs."

"1. Develop linkages with local government, economic development agencies, business and community leaders in a mutual exploration of available natural, physical, and human resources which can be focused toward providing new gainful and permanent employment for their underemployed and unemployed."

On the Eastern Shore:

In Wicomico County, linkages were developed to improve the county's capabilities to undertake sound economic planning not just industrial development. City of Salisbury officials were assisted in preparing their Community Development Block Grant application to HUD, in their application to the Department of Human Resources for CETA positions, in locating proper industries for the Northwood Industrial Park, and in the development and funding of such current economic development plan elements as the seeking of Federal and State funding for the dredging of the Wicomico River and new water main system to support housing and commercial development.

In Somerset County, new linkages have resulted in a revitalized economic planning process, coordinated by an expanded Somerset County Redevelopment Corporation which is gearing up to undertake the development of industrial sites in Princess Anne and Crisfield A Somerset County Maritime Development Committee has been formed to plan for the development of a deepwater port and related industrial complex for the City of Crisfield.

Cecil County has witnessed a marked improvement in its capability for planning and programming of economic development. A new Overall Economic Development Program Committee was formed; a county economic plan was drawn and funding sought from EDA and from other Federal and State agencies; and a redevelopment strategy based on the optimum mix of employment, housing and retail opportunities has been developed for the Bainbridge Naval Training Center area.

In Dorchester County, the OEDP Committee has been enlarged, restructured and assigned the task of being the economic planning advisory agency for the County Government. In Worcester, DECD's field representative worked closely with the Delmarva Advisory Council in winning EDA designation of the County by EDA. This designation was just announced. More important, there exists now in the County fresh, new enthusiasm among County leadership and the citizenry to carry out economic development activities.

In Southern Maryland:

The DECD field representative has been in constant contact with the two Southern State Senators and the three Delegates from the counties as well as with all major elected officials, professional planners and economic developers. He has frequently functioned as a catalyst and go-between to facilitate closer cooperation among the Economic Development Commissions of the three counties and between them and the staff and board of the Tri-County Council of Southern Maryland.

In the Corridor:

In each jurisdiction in the Corridor, Montgomery, Prince George's, Anne Arundel, Howard, Baltimore and Carroll Counties and in Baltimore City, linkages have been permanently established within the county and city councils, chief executives and the staffs of each, the economic development agencies, planning commissions, and the several Chambers of Commerce and Boards of Trade plus numerous businesses.

"2. Develop a knowledge of and communication with pertinent state and federal agencies whose programs foster and support economic development."

The report of the field representative for Southern Maryland is typical: "In pursuing economic development objectives in Southern Maryland, I acquainted myself with a number of federal and state agencies and their programs. At the federal level I became familiar with the Economic Development Administration (EDA), Farmers Home Administration (FMHA) Small Business Administration (SBA) and the Office of Economic Adjustment (OEA). In addition, I acquainted myself with two federally funded programs in Southern Maryland, the Resource Conservation and Development Board and the Community Action Committee. At the state level, I became familiar with the Departments of State Planning, Natural Resources, Human Resources, Transportation and the Maryland Technical Advisory Service. The two operating divisions with which I work most closely in DECD are Tourism and Business and Industrial Development.

"3. Provide information to EDA about the status of grantee programs, projects and related activities and problems."

The field staff has been under the direct supervision of John B. Moore, Jr., who served for many years as EDA's representative in Maryland. Mr. Moore has acquainted his staff in the most thorough manner possible with the programs and procedures of EDA. There has been no application or major initiative involving EDA in the State that has not involved the field representatives of DECD.

"4. Guide developments to assure that these are consistent with the provisions of the National Environmental Policy Act of 1969."

A constant theme voiced by all DECD spokesmen, including field representatives, is for "balanced growth" which gives appropriate weights to the sometimes competing demands of growth and job creation. Local attitudes vary widely throughout the State. The comment of the Southern Maryland field representative is worth noting: "Complying with this law in Southern Maryland is not difficult because the decision-makers are environmentally motivated. In fact, the problem is just the opposite. Southern Maryland is so environmentally oriented that many times it will exclude industry that can provide jobs and tax revenue." He cited as one evidence of this attitude the decision of St. Mary's County voters against location of an oil refinery. One might cite as an opposite viewpoint the "county that brought us Ocean City." In Worcester County, therefore, the field representative may see himself as having a particular responsibility in reminding economic developers of the other side of the balance sheet. (For lack of State-wide, inter-agency attempts to insure "balanced growth," field representatives of individual agencies are handicapped, but not blocked from assuring the balance.")

"5. Work toward generating district-wide overall economic development processes as specified in EDA guidelines."

The DECD field staff have made consistent and sometimes noble efforts with mixed results. Close cooperation with the staff and board of the Delmarva Advisory Council, including the placement of a DECD field representative at the headquarters of DAC, has had the happy result of creating a productive linkage between DAC development planning and the State-wide development planning efforts of DECD. At least partial credit for the EDA authorization of Tri-County Council of Western Maryland should go to the DECD field representative. There have been continued, and partially successful, efforts to broaden the scope and impact of that organization's development planning efforts. In Southern Maryland, efforts to gain support of all three counties for the organization's qualification as an EDA Economic Development District have not yet borne fruit. Nor has the Corridor representative's enthusiastic support of the Regional Planning Council's Task Force on Economic Development yet served to move that organization to make the necessary changes that might insure both EDA designation as a district and its transformation into a truly effective regional economic planning entity.

"6. Maintain continuous review and evaluation of the proposals and actions of the districts and localities as to their capacity to alleviate persistent underemployment and unemployment of resources, suggesting adjustments where events require a change in strategy."

Field staff have participated actively in project review sessions at regular OEDP committee meetings, and, where relevant, when the same projects are being considered for inclusion in a District OEDP. It must be noted, however, that the degree of field representative involvement as well as the manner and style of that involvement varies greatly. These field representatives of DECD play a more open "review and evaluation" role with regard to those regional organizations (such as DAC and TCCWM) where DECD plays a "lead agency" State role and is somewhat responsible for part of the funding. Similarly, when the field representative of DECD was, in effect, acting as monitor for a study and an economic developer position funded by EDA through DECD, his "review and evaluation" position was clear and accepted.

"7. Encourage private and public leadership to carry on a continuing development process."

This "encouragement" has been the basic educational task of the field staff in every county and region in the State. Because of the efforts of that field staff, funded under this grant, new OEDP committees, widely representative of both public officials and private citizens at all rungs of the economic ladder, have been established. Others, some of them almost defunct, have been revitalized. All have been informed of the State-wide process and their role in it.

"8. Coordinate the efforts of participating instrumentalities and provide liaison with the State."

The field staff has frequently acted as the catalysts to establish more productive relationships between planners and economic developers.

Whenever the opportunity has arisen, the field staff has worked to educate and persuade all who will listen that genuine economic development goes far beyond industrial development. The individual reports that are attached detail some of those efforts. In every way possible, the field staff has encouraged the Counties to become active participants in their regional organizations and to cooperate with each other. A Southern Maryland tourism package, engineered in large part by the DECD field representative, is such an example of the catalytic role the field staff has played. The assessment made by DECD Secretary Joseph G. Anastasi, in a letter to EDA Regional Director John Corrigan, remains a good summary of the value of the field staff efforts:

> "In fulfilling our sub-contract with the Department of State Planning under EDA Flood Disaster funds, we were able to begin our Development Planning process with a field force as well as a research/planning unit. Through the field staff, each county, each municipality, and each regional organization has been involved in the planning process from its beginning. All existent local plans have been obtained. Briefings on the development process have been conducted on a county-by-county basis. One result of this field activity is that the counties designated by EDA now know that the State is fully behind EDA in wanting good OEDP's prepared by broadly representative committees. Some counties have agreed to improve the OEDP. Several counties which do not have OEDP committees have agreed to establish new organizations and programs to perform the OEDP functions. Some counties in which economic development activity tends to be limited to industrial development have agreed to broaden the role of those offices. Throughout the State, the activities of the field representatives have tended to nudge local planners and economic developers closer together and to increase their awareness of their interdependencies and mutualities of interest."

Finally, as part of this final report, it would seem appropriate to include a special report, sent on April 11, 1975, in lieu of the usual quarterly report. This special report summarized the field activity by geographic area that relates most specifically to their educational, consciousness-raising efforts regarding flood program management.

Southern Maryland

'The Field Representative for Southern Maryland has called on local elected officials, planning and economic development officials, legislators and key business people throughout Southern Maryland to determine their degree of awareness of flood problems and the short and long range implications of flood Program Management. Where the progress appeared to be lagging he gave special attention primarily by encouraging meetings among planning officials and financial interests in the communities. These discussions contributed to St. Mary's County becoming a participant in the Maryland Flood Insurance Program. Through meetings with local officials, following preliminary reports of progress in Flood Plain Management decisions and contacts with other governmental agencies, the Field Representative has been alerted to any new actions which could have positive or detrimental effects. He has provided counsel to local officials on economic development planning toward growth of employment

in activities less vulnerable to future disasters. The Field Representative has coordinated his activities with others within the Department of Economic and Community Development and the Department of Natural Resources to avoid over-laps and under-laps and to see that all jurisdictions within his territory are pursuing development planning with full sensitivity to the probability of future natural disasters and the potential for developing an employment base which will be less vulnerable to Agnes type occurences."

Eastern Shore

"The Field Representative on the Eastern Shore has visited with local elected officials, planning directors, economic development officials, legislators, and key private sector interests throughout the territory to impress upon them the importance of compliance with Federal Regulations regarding the areas that qualify for Flood Insurance in order to continue the normal economic activity. Where communities did not have adequate information he made arrangements for dissemination of literature and maps to the appropriate individuals and agencies. The Field Representative enlisted the influence of real estate people to encourage action by the appropriate elected and appointed officials. He involved economic development committees and commissions to bring their influence to bear on the process. In particularly hard-hit areas and the most vulnerable areas he has put particular emphasis on reviving dormant development processes. In some cases this has brought about appointments of new committees and commissions. In other cases this has brought about the rejuvenation of inactive committees and commissions."

Baltimore-Washington Corridor

"The Field Representative advised jurisdictions of the need for flood protection programs and the requirements of the DHUD Flood Insurance Program. The Field Representative has found that the Corridor counties are satisfied that the local governments are cognizant of the need for flood protection measures to prevent loss of business and industry. In some of the jurisdictions new ordinances are establishing protective measures."

Western Maryland

"The Field Representative teamed up with Flood Relief Specialist Eugene Combs (of the Tri-Council for Western Maryland) to help convince the counties and communities to take the necessary steps to qualify for emergency flood insurance. He met with COG in Washington, Garrett and Allegany Counties to prod them to take action. Now 75% of the municipalities in that area are either qualified or have applications pending. Washington County was already in the program. Allegany and Garrett have applications pending. It is hoped that by June 30 all communities and counties will be qualified or have applications pending. Since the ODP Field Representative met with the COG in Frederick County to explain the program, four communities have qualified and three others are preparing applications. (Frederick County and Frederick City were already in the program and three other communities have no flood prone areas.)"

The Example of Bainbridge

In hundreds of discussions with the political and economic leadership of counties and communities, the staff of the Office of Development Planning attempted to instruct on the need for better economic planning and the long-range consequence of that planning. One of the most intensive involvements of the staff has been in the planning of the Reuse of the Bainbridge Naval Training Center to accord with Cecil County's economic and community development objectives. It fell to the Office of Development Planning to monitor both the "Marketability and Redevelopment Analysis" by Morton Hoffman and Company, Inc. and the creation of an Economic Development Office by the County. In all, five staff members of ODP have been involved in the effort, with Field Representatives Donald Clifford and Edward White teamed up to work with the County on creation of a new Overall Economic Development Program and a broadly representative citizen committee.

The year's effort regarding Bainbridge and Cecil County stands as a significant example of how the leadership of a County and its communities has been brought to a new understanding of how to plan for enlightened industrial development and specifically of a kind that will "survive future natural disasters." The Town of Fort Deposit on the Susquehanna River near Bainbridge suffered heavy damage from the flood following Agnes. The town's chief employer, The Wiley Manufacturing Company, was forced to shut down for several weeks. With the alternative and diversified employment that the redevelopment of Bainbridge will afford, the townspeople will no longer be dependent on a company in the flood plain. The industrial, commercial and institutional employment that will be created will also go to people in two other towns that suffered heavy losses in the flood, Perryville in Cecil and Havre de Grace in Harford Counties.

Another example of ODP field activity influencing positive economic development process is a case involving industrial site development in Crisfield, Somerset County. Following several years of stalemate on development of the proposed Annemessex industrial complex the principle participants in this effort at State, regional and local levels reached a decision to set aside the "Annemessex Project" and resume efforts on a smaller water oriented industrial park within the city limits of Crisfield. This re-direction of emphasis toward a less complicated goal is expected to more rapidly produce industrial activity which is far less vulnerable to natural disaster than is the seafood industry which is now such a major factor in Somerset County employment.

There follows a list of publications and reports produced in the grant period covered by this report and partially funded by it.

Sincerely,

John B. Moore, Jr.
Director
Office of Local and Regional Liaison

JBMjr/paf

Enclosures

L. Leon Peterson

DSP Final Report
Work Program
Southern Maryland

1. Develop linkages with local governments, economic development agencies, business and community leaders in a mutual exploration of available natural, physical, and human resources which can be focused toward providing new gainful and permanent employment for their underemployed and unemployed.

The following individuals were contacted in order to explore ways for providing new gainful and permanent employment for the underemployed and unemployed in Southern Maryland: the two Southern Maryland State Senators and three State Delegates; the County Commissioners, Administrators, Planners, Economic Development Directors, and Tourism Directors of Calvert, Charles and St. Mary's Counties; and the staff of the Tri-County Council for Southern Maryland (TCCSM) which assists the Senators, Delegates and County Commissioners who comprise the Council. The interaction that has taken place between me and the above mentioned has focused on the "Overall State Economic Development Plan" (OSEDP) and local planning efforts. Economic development planning has been stressed with these individuals since this approach appears to be a sound long-term strategy in combating underemployment and unemployment in Southern Maryland.

On a day-to-day working basis it should be noted that I work closely with the three county Economic Development Commissions or their Directors, plus the Executive Director and Economic Specialist of TCCSM. These individuals not only rely on me for economic development planning advice but they call upon me for project advice as it relates to the programs of the Department of Economic and Community Development (DECD), other state programs and federal programs.

2. Develop a knowledge of and communication with pertinent state and federal agencies whose programs foster and support economic development.

In pursuing economic development objectives in Southern Maryland, I acquainted myself with a number of federal and state agencies and their programs. At the federal level I became familiar with the Economic Development Administration (EDA), Farmers Home Administration (FmHA), Small Business Administration (SBA) and the Office of Economic Adjustment (OEA). In addition, I acquainted myself with two federally funded programs in Southern Maryland, the Resource Conservation and Development Board and Community Action Committee. Of these federal programs, the ones I work closely with are EDA and OEA.

At the state level I became familiar with the Department of State Planning (DSP), Department of Natural Resources (DNR), Department of Transportation (DOT), Department of Human Resources (DHR), Maryland Technical Advisory Service (MTAS) and, of course, my Department, DECD. The programs I work closely with at the state level entail three Divisions within DECD, Tourism, Business and Industrial Development and the Office of Development Planning.

3. Provide information to EDA about the status of grantee programs, projects, and related activities and problems.

One of the first things I did in Southern Maryland to make sure the locals were familiar with EDA and vice versa was to introduce the Maryland Economic Development Representative (EDR) to each county's Economic Development Director and the Executive Director of TCCSM. Out of these meetings grew a working relationship between EDA, the three counties and TCCSM.

With regard to specific activities in each of the three counties, EDA has been advised on the status of such things as "Overall Economic Development Programs" (OEDP's) and Title X projects. In addition, EDA has been kept up to date on the development of the industrial park in Calvert County. Also, EDA advice was solicited in terms of St. Mary's County's desire to build an industrial park, seafood processing plant and waterfront convention center.

4. Guide developments to assure that these are consistent with the provisions of the National Environmental Policy Act of 1969.

Complying with this law in Southern Maryland is not difficult because the decision-makers are environmentally motivated. In fact, the problem is just the opposite. Southern Maryland is so environmentally oriented that many times it will exclude industry that can provide jobs and tax revenue. This was evidenced by the county deciding not to locate an oil refinery in St. Mary's County.

5. Generating district-wide overall economic development processes as specified in EDA guidelines.

Since all three counties in Southern Maryland are EDA designated counties, I stressed that each county should have an Overall Economic Development Plan (OEDP) plus submit an annual OEDP progress report. Calvert and Charles Counties had OEDP's, whereas St. Mary's County did not. Thus, one of my first tasks was to assist St. Mary's County in this endeavor. The St. Mary's County Economic Development Commission (EDC), TCCSM Economic Specialist and myself helped to put together an OEDP for St. Mary's County.

I encouraged TCCSM, along with many others, to come up with a regional plan so the individual county plans would be consistent with regional goals and objectives. Southern Maryland has come up with a "Regional Prospective", which is a compilation of the three counties' comprehensive plans.

I have also been working with TCCSM staff in their efforts to become an Economic Development District (EDD). However, as of this date Calvert and St. Mary's Counties are inclined in this direction whereas Charles County is not.

6. Maintain continuous review and evaluation of the proposals and actions of the districts and localities as to their capacity to alleviate persistent underemployment and unemployment of resources, suggesting adjustments where events require a change in strategy.

The review and evaluation process of proposals and actions to alleviate persistent underemployment and unemployed in Southern Maryland is multi-facted. First, I maintain contact with the individuals that are construed to be Southern Maryland linkages noted earlier in the report. In our discussions of OSEDP and local planning matters, adjustments are recommended where events dictate a change in strategy. Second, and more formally, county OEDP's, county comprehensive plans and regional plans are reviewed periodically to ensure that the goals and objectives are still relevant. For example, the St. Mary's County OEDP was revised considerably to conform to current EDA and county thinking. Third, in many instances I will recommend that an agency outside of the county evaluate a certain county project or other county endeavor. In Calvert County I got the Industrial Park Manager together with a representative from my Department's Business and Industrial Development Division to discuss the progress of the development of the Calvert County Industrial Park. In St. Mary's County I arranged for the Office of Economic Adjustment to come in and do an impact study. The county was claiming that it was adversely affected by a unit leaving the Patuxent Naval Air Test Center.

7. Encourage private and public leadership to carry on a continuing development process.

A continuing local development process is being stressed by me through my association with the County Economic Development Commissions (EDC's) and Economic Development Directors. Calvert and St. Mary's Counties have asked me to sit in on their monthly EDC meetings. This affords me the opportunity of being an active participant in their economic development process. On the other hand, my influence with the Charles County EDC is solely thrcugh its Director since I have not been encouraged to date to have direct contact with the EDC. The Director and I have, however, a good working relationship and the time I spend with him is comparable to the time I devote to the Calvert and St. Mary's EDC's.

Of the three counties, Charles County has the most effective economic development process. However, both Calvert and St. Mary's Counties are becoming more sophisticated in economic development matters. Calvert County's Economic Development Director is relatively new to the economic development game but he is learning, and St. Mary's County is in the process of hiring an Economic Development Director.

With regard to the OSEDP process, the individuals deemed to be Southern Maryland linkages will continue to be tapped for economic development information as it relates to Southern Maryland. Also, the TCCSM Economic Specialist who serves on the OSEDP Technical Panel will be encouraged to remain in that key position.

6. Coordinate the efforts of participating instrumentalities and provide liaison with the state.

DECD designated me as the ex officio member of TCCSM. This ex officio role not only affords me the opportunity of providing state input at Council meetings, but I also have the opportunity of acting as a catalyst for county cooperation at Council meetings since I work with each of the three counties. Aside from Council meeting activities, my ex officio role with the TCCSM enables me to engage in many activities in the field which brings the state, TCCSM and the counties together in a cooperative effort.

With regard to the latter, here are three examples. First, I was able to get state, TCCSM and county tourism staff people together in order to discuss a regional approach to tourism. It has been a rocky road, and still is, but agreement was reached on a Southern Maryland tourism package. Second, the Calvert County Economic Development Commission (EDC) asked me to identify state programs that might be of assistance to them in their monthly meetings. I prevailed upon the Calvert County EDC to invite a TCCSM staff member to their meetings as well so he could play a similar role to mine but represent a regional perspective. On the other hand, the St. Mary's County EDC initially asked both myself and a TCCSM staff member to attend their meetings. Third, in many instances, I have been able to facilitate communication between TCCSM staff members and the counties. In particular, I have been involved in alleviating mistrust that existed between TCCSM staff members and the Charles County Economic Development Director.

MEMORANDUM

November 10, 1975

TO: John B. Moore, Jr.

FROM: Edward H. White, III

SUBJECT: DSP Final Report

I. Develop linkages with local governments, economic development agencies, business and community leaders in a mutual exploration of available natural, physical, and human resources which can be focused toward providing new gainful and permanent employment for their underemployed and unemployed.

A. Wicomico

While Wicomico is not a designated county it does contain the city of Salisbury which is an EDA growth center. There is a tendency to view the industrial recruitment process carried out by SWED as a substitute for economic planning. Linkages have been developed to improve the county's capabilities to undertake sound economic planning not just industrial development.

1) Provided information to County Government
   a) DECD assistance - Enter gamut
   b) DAC - Delmarva Advisory Council
   c) Federal Programs - Trade Act, others
   d) Special Projects - Pine Bluff

2) Maintain Liaison with SWED
   a) Advise of State and Federal Programs
   b) Refer Industrial Prospects
   c) Continued strategy meetings to improve delivery of services to clients

3) Assisted City of Salisbury officials in:
   a) Community Development Block Grant application to HUD
   b) Application to Department of Human Resources for CETA positions
   c) Locating proper industries for Northwood Industrial Park
   d) Development and funding of current Economic Development Plan elements which include:
      1) Sought State and Federal funding for: a) "Eastern Shore Drive" which would provide needed traffic congestion relief; b) a new water main system to support housing and commercial development; c) dredging of the Wicomico River

4) Assisted Town of Delmar in preparation of application to EDA for needed support for Industrial Park Development

5) Provided Greater Salisbury Committee with assistance on numerous projects
   a) Multi Model Project - coordinated at State, Local and Regional levels this project, which calls for a central distribution terminal to be located in Salisbury. State aid has been promised by DECD and MDOT.

6) Consultant to Delmarva Water Transport Committee whose purpose is to expedite river maintenance dredging projects

7) Developed linkages with Salisbury Chamber of Commerce

B. Somerset

1) Linkages have been developed with County and local government, Delmarva Advisory Council (DAC) and community leaders in an effort to revitalize the economic planning process. The results are:
   a) The Somerset County Redevelopment Corporation, which had been inactive has now been charged with the coordination of county economic planning activities. Its membership has been expanded and new leadership is meshing with old to provide needed direction. The committee is gearing up to undertake the development of industrial sites in Princess Anne and Crisfield.
   b) The formation of the Somerset County Maritime Development Committee. This Committee has planned for the development of a deepwater port and related industrial complex for the City of Crisfield.

2) In order to accomplish the creation of Somerset County OEDP Committee and Somerset County Maritime Development Committee, knowledge of and communication with numerous State and Federal agencies were developed. To name a few: Economic Development Administration (EDA), Corp of Engineers, Housing and Urban Development (HUD), Department of Labor, Delmarva Advisory Council (DAC), Department of Natural Resources (DNR), Maryland Department of Transportation (MDOT), Department of State Planning (DSP)

3) EDA has been kept informed on all work done by the Maritime Development Committee as well as Title X applications from Princess Anne and Redevelopment Corporation activities.

4) Princess Anne has been assisted with its Community Development Block Grant application to HUD and its Title X application to EDA. Crisfield also received assistance in preparing their Community Development Block Grant application. All were funded.

5) The county tourism industry has been verbalized and is making progress towards recapturing lost tourism dollars. The County has received a state grant to develop a travel brochure to promote the county's tourist sites.

6) An exchange of information was started from the watermen to the various State and Federal agencies that regulate them in an effort to lessen hardships and unworkable conditions imposed by new regulations.

C. Worcester

Since the County has never been designated by EDA, linkages were developed that would bring designation about. Working closely with DAC the climate in the County was changed and an application for designation has been submitted. The progress of the application is being monitored and the locals are being kept informed.

Working with individual municipalities, projects are being readied. In Pocomoke an Industrial Development Committee has started planning for a site and has been receiving guidance on all matters inherent in site development and subsequent recruitment of prospects.

D. Dorchester

1) Linkages were established with the County and local government, DAC and community leaders in an effort to form an economic planning process in the County. Results are:
   a) The OEDP Committee has been enlarged, restructured and assigned the task of being the economic planning advisory agency for the County Government
   b) The Title X Advisory Committee has integrated its research capabilities with the needs of Dorchester OEDP

2) MIDFA loan was processed for Maryland Wire Belts expansion

E. Talbot

1) Linkages were established with the County and local government, DAC and community leaders in an effort to strengthen the economic planning capabilities of the County.

   MIDFA Loan was processed for Hanks Seafood

F. Caroline

1) Linkages were developed in an effort to create an economic planning capability for the County. After many meetings with the locals an application for designation was proposed and sent to EDA. The designation was not granted

2) Assistance has been provided to the County in securing industrial sites for Federalsburg and Denton. Assistance in recruting industries has also been provided

G. Queen Annes

1) Linkages were developed that would strengthen the economic planning capabilities of the County
   a) Meetings with local housing committees brought about inclusion of housing projects in OEDP
   b) Assistance was provided in industrial site selection as well as recruitment

H. Kent

1) Linkages were developed that would strengthen local economic planning capabilities
   a) New OEDP committee was formed by combining old OEDP and EDC
   b) Projects have been submitted to EDA under Title X
   c) Chestertown has been assisted in developing a Community Development Block Grant to HUD
   d) Plans for "theme development" of Betterton, Galena, Rock Hall, Millington municipalities have been reviewed by OEDP

I. Cecil

1) Linkages were developed that would strengthen the economic planning capabilities of the County
   a) An OEDP committee was formed
   b) A County economic plan was constructed and funding was sought from EDA and other Federal agencies as well as State agencies
   c) A redevelopment strategy based on the optimum mix of employment, housing and retail opportunities has been developed for the Bainbridge Naval Training Center area.

II. Develop a knowledge of and communication with pertinent State and Federal agencies whose programs foster and support economic development.

A) Wicomico

1) In order to develop a Senior Citizen Housing site at Pine Bluff, close working relationships were developed with Delmarva Ecumenical Agency, Maintenance of Aged in Community (MAC), Office of Aging

B) Somerset

1) To assist the Somerset Maritime Development Committee (SMDC) communication was established with Federal EDA, Labor, HUD, Corp of Engineers and others. Communication with State agencies included Maryland Department of Transportation (MDOT), Department of Natural Resources (DNR), Department of State Planning (DSP), Department of Agriculture, University of Maryland Extension Service.

C) Dorchester, Worcester, Queen Annes, Kent, Talbot, Caroline

1) Communication was established with various State and Federal agencies to bring about the revitalization of the OEDP process

D) Cecil

1) The redevelopment of the Bainbridge Navel Base required communications with GSA, Navy, Department of Defense and others.

III. Provide information to EDA

A) Wicomico

Information to EDA via DAC briefings took place on the following projects:

1) Multi Model Transportation Center funding sought
2) River Dredging activities of Water Transport Committee
3) Pine Bluff Housing Project
4) Industrial Development activities of SWED

B) Somerset

1) EDA has been kept informed on and provided assistance to the activities of the Somerset County Maritime Development Committee (SCMDC). EDA, Bob Roberts has been briefed on DECD's role and attended Secretary Anastasi's meeting with Somerset County Commissioners
2) Princess Anne Title X application

C) Kent

1) Provided information to EDA, Bob Roberts and DAC in an effort to secure funding for County's Title X application

D) Dorchester, Queen Annes, Caroline, Worcester

DAC has participated in revitalization process

IV. Work toward generating district-wide overall economic development processes as specified in EDA guidelines.

A) Wicomico

1) Act as link between Salisbury Growth Center and rest of County by performing liaison role between local governments

B) Revitalization of Somerset, Dorchester, Kent, Cecil and Quenn Annes overall economic development processes

C) Application for designations from Worcester and Caroline

V. Maintain continuous review and evaluation of the proposals and actions of the districts and localities as to their capacity to alleviate persistent underemployment and unemployment of resources. Suggesting adjustments where events require a change in strategy.

A) Projects are reviewed as they are being developed at the regular OEDP committee meetings and then again at the District level before they are included in the District OEDP.
Examples are:

1) Dorchester OEDP - Retail Sales Study for Cambridge
2) Somerset - Princess Anne Title X application - Title X application for Feasibility Study for Crisfield
3) Kent - Title X application
4) Cecil - Industrial Development Title X application proposal

VI. Encourage private and public leadership to carry on a continuing development process.

A) Key leaders in every county have been briefed on the OSEDP, why it is needed, how it is being developed, what it will mean to them and what form their participation could take, are points that have been highlighted

B) The need for a continuing, active economic development process has been stressed in every county. Since no process existed to speak of, the task has been one of relating needs and goal achievement to sound planning efforts

VII. Coordinate the efforts of participating instrumentalities and provide liaison with the State.

A) The Pine Bluff Housing Project is a Regional facility and has been coordinated with four county governments - Wicomico, Dorchester, Somerset and Worcester

B) The Somerset Maritime Development Committee (SMDC) activities have required coordination among the four lower shore counties.

C) The upper shore Council of Governments was briefed on the Department's Sheltered Housing programs.

D) Efforts are being made to form a lower shore Council of Governments

MEMORANDUM

November 10, 1975

TO: John B. Moore, Jr.

FROM: Mike Kilpatric

SUBJECT: DSP Final Report

Since April 1974 this writer has met over 150 times with local elected and appointed officials in the four eastern counties. In addition, over 100 meetings and hearings have been attended ranging from Master Plan hearings to the economic impact of rail line abandonment.

To assist local government this writer has established contacts in other Maryland Departments, notably, MDOT, HMH and DNR. A good working relationship also exists with Senator Beall and Congressman Byron.

The easiest way to judge the overall effectiveness of this program is to look at the direct results:

1) Assisted in getting TCCWM recognized as an EDD.

2) Assisted EDA Economic Development Representative in compiling Title X Applications.

3) Wrote job description for Frederick County Housing Coordinator and delivered swing vote on the Commission for this position.

4) Personally led fight to save W.D. Byron and Sons, Inc. the major employer in Williamsport, Maryland.

5) Delivered swing votes in Washington County to save Housing Coordinator Project.

6) Established contact between BID and Allegany County Commissioners which led to Jamestown, New Jersey visit and ultimate Labor/Management dialogue and project proposal.

7) Cleared "Red Tape" between Maryland HMH and Garrett County for the completion of a sewerage project which will result in 100 new jobs.

8) Suggested that Garrett County seek DECD assistance for a convention center study.

9) Served on Planning Committee for Frederick County Economic Development Seminar.

10) Was the instrument behind quick action by the Secretary to clear a dispute between the historical people and Frederick County which saved an $8,000,000 sewage treatment plant.

There are many little things too numerous too mention, such as supplying answers to delegates and senators. Modesty has never been a virtue of the writer. It is firmly believed that DECD is better understood by people in Western Maryland because of this writer.

Local officials are more aware of the necessity of economic planning, they are more confident that someone can assist them in slicing through the bureaucracy and they know their legitimate concerns will get a fair hearing. Many times an improved atmosphere leads to progress.

MEMORANDUM

TO: John B. Moore, Jr.

FROM: Donald W. Clifford

SUBJECT: DSP Final Report

In each jurisdiction in the Corridor, Montgomery, Prince George's, Anne Arundel, Howard, Baltimore and Carroll Counties and in Baltimore City, linkages have been permanently established with the county and city councils, chief executives and the staffs of each, the economic development agencies, planning commissions, and the several chambers of commerce and boards of trade plus numerous businesses to great in number to reiterate here. An exception is Carroll County which has a commission government. Each jurisdiction has an individual economic development program varying from a simple program in Carroll County to the sophisticated procedures of Baltimore City, Prince George's and Montgomery Counties.

In order to provide this sterling performance (modesty, as in other areas of the State has never been a virtue) an intricate knowledge of State and Federal agencies and programs has been brought to the DECD and through diligent effort this unfathomable knowledge has become more unfathomable. The work program has been guided and accomplished, always being conscious that development must be consistent with the provisions of the Regional Environmental Policy Act of 1969.

In the Corridor there appears to be two separate district wide economic development processes evolving. These are the initial efforts of the Baltimore Regional Economic Task Force (RETF) under the RPC and the loosely coordinated economic development efforts of Prince George's and Montgomery Counties through the common interests in the Maryland National Capital Park and Planning Commission and the Metropolitan Washington Council of Governments. What initially began as an area wide process in the Baltimore region has now evolved as an economic marketing effort. Through the increasing efforts of the DECD and particularly the OLRL, it is anticipated that eventually the RETF marketing effort may materialize as a model economic development district for a major urban center. Strong district wide OEDP is not possible in the Washington COG area at this time.

Continual liaison has been provided between each governmental unit and the State in the Corridor area. Assistance has been provided to each jurisdiction concerning the specific DECD programs as needed. In addition, the writer, with ever increasing efficiency, has been functioning as a clearinghouse for the sharing and transmittal of planning and development techniques and processes between the Corridor jurisdictions.

Montgomery County

Montgomery County has developed with its planning commission at the charge of the County Council and the County Executive what is possibly the most sophisticated development policy plan program in the country today. The program, which is continuously evaluated, is in its second year and has been computerized successfully to the extent that the DECD is evaluating the computer system for adaptation to the OSEDP. In addition to the usual liaison functions, the writer has suggested and been instrumental in having the County Executive declare Business Appreciation Week with a recognition program to be conducted by the County Chamber of Commerce (November 20, 1975). Joe Anastasi, Secretary, DECD, and Jay Jacobs of the Black & Decker Manufacturing Company will be the guest speakers.

During the last year Prince George's County has established a new Department of Program Planning and Economic Development, that has produced an intricate development program impact evaluation system. Although this has proved to be a difficult system for the county to administer, the principal of this procedure has been used by the ODP as a model for other jurisdictions in the State. As a result of the writer's work with the local chamber of commerce, a successful industrial appreciation day was held in January. In addition, a successful tourist promotion program was also held with a local Prince George's County Chamber of Commerce. Each of these programs included the executives, local officials and delegates from Prince George's, Howard and Anne Arundel Counties.

Anne Arundel County

After having operated without any economic development activity for the latter half of 1974, Anne Arundel County is now reorganizing its economic development program with assistance from this office. The County, which has lagged behind other metropolitan jurisdictions in its taxable base and industrial development opportunities, is concentrating on quality in development. Continual liaison has been provided with the departmental counterparts and the Board of Trade. In addition, assistance has been provided to help develop and update the industrial zoning classification. Earlier this year the county initiated its general development plan re-evaluation program which will include an economic development element.

Howard County

Howard County has, because of the fortunate coincidence of having Columbia City located within its boundaries, enjoyed the most significant economic growth of any jurisdiction in Maryland. This has been accomplished essentially without an economic development program per se. However, due to the impact of Columbia the County has developed a competent planning department which has produced a modern general development plan. This plan, which is now in its first revision, will contain an economic development aspect that will recognize both physical and economic implications in determining the areas to be scheduled for future growth. In addition, the Department is now working with the County Community Action Council to provide development technical assistance to a rural section of the county.

Baltimore City

As Baltimore City is possibly the most singularly important economic factor in the State, this Department has had a long association in the economic development activities of the city. The City of Baltimore has produced the only completely detailed Overall Economic Development Program in the State of Maryland. The OEDP provides the basis and "shopping list" for the grant applications to the Federal government for physical development funding. Most significantly the Department has been instrumental in assisting the City to receive two planning grants for the industrial redevelopment of Fort Holabird, and a 2.2 million dollar EDA funding grant for the improvements to the South Russell Industrial Area. The Department has provided assistance to the Baltimore Industrial Development Corporation (a quasi-public city institution), assistance to the Planning Department with applications for EDA Title X funding, assistance in development of legislative suggestions and the grant application to the EDA for the receipt of $100,000 of Section 302 economic planning funds.

Baltimore County

Baltimore County is presently in the first year of a five year cycle for the re-evaluation and production of a new General Development Plan. This has been termed a major growth policy statement including an economic impact process with recognition of the physical facilities replacement and impact costs throughout the County. The Department has held a number of informal conferences with the County concerning the development of this plan. Assistance has been provided to the County in developing its housing policy and its downtown and neighborhood renewal programs. The office has also worked closely with the new economic development director and introduced him to the DECD and its programs.

Harford County

In Harford County the writer has developed and maintained a close working relationship with both the Director of the Planning Department and the Director of the Economic Development Commission. We have been instrumental in helping the County to develop the economic element of the general development plan and with the development of the county housing program. Assistance has been provided to the Economic Development Commission in all programs of the Department. The County EDC has been reorganizing and has been most appreciative particularly in its work with MIDFA. Also the various County departments have worked with us constantly in monitoring the status of the Department of Defense plans for the future use of the Aberdeen Proving Ground.

Carroll County

Although Carroll County has the smallest population and is the most rural jurisdiction of the Baltimore area it maintains an excellent planning department and economic development commission consistent with the County philosophy to maintain a rural atmosphere and develop in smaller interrelated areas. The County has produced the most effective development impact evaluation system of any small county. This office has recommended the process to other rural jurisdictions as an effective program for measuring development impact. Although the economic development activity is small in comparison with the other jurisdictions, we have maintained a continual liaison with the EDC and have assisted in attracting a number of smaller industries compatible with their rural development policy. In addition, the writer has worked with the Town of Westminster to determine the availability of Federal funds to the community as an import industry impacted area.

In addition to the liaison functions to the political subdivisions the writer also has established and maintained effective liaison with the Baltimore Regional Planning Commission, the Metropolitan Washington Council of Governments and the Maryland National Capital Park and Planning Commission. The writer is presently the Department representative to the Baltimore RPC, maintains liaison with the staff of the Regional Economic Task Force and is the Department representative to the Baltimore Harbor Planning Advisory Committee of the RPC. The writer maintains an informal relationship with the Wash COG and the District of Columbia Government. This includes continual contact with the COG economic staff, Land Use Policy Committee and the Fiscal Management Committee. In addition, the writer is working with the Wash COG to help organize a one day economic development conference for the Washington area. Although much of the material from the Maryland National Capital Park and Planning Commission is covered by the respective

county agency from either Prince George's or Montgomery County, the Commission has been most helpful in providing a regional purview of activities in that area.

Each of the above jurisdictions and the respective departments mentioned in this report have been most helpful and active with the technical panel of the OSEDP or have informally responded to our request for input to the program.

OFFICE OF DEVELOPMENT PLANNING

DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT

PUBLICATIONS

Program Papers

1. The Economic Development Planning Process in Maryland: Working Documents as of November, 1974

   166 pages

   A compilation of materials which reflect "a planning process in mid-stream." Includes an outline of work stages for developing an OSEDP, Occasional Papers #1 and #4, suggested goals and objectives responding to problems and causes, and extensive bibliography.

2. An Economic Development Process for Maryland
   32 pages (revised November 1975)

   A description of the tools and institutional arrangements being created in Maryland to facilitate economic development decision-making and implementation. Includes Toward a Planning Paradigm as an appendix.

3. An Economic Development Plan for Maryland: A Perspective
   25 pages (Revised October 1975)

   An exposition of the theory and assumptions that will serve as a basis for proposed Maryland economic development strategies. A companion piece to the process paper.

4. Economic Development Goals for Maryland
   28 pages (in preparation)

   A set of development goals for Maryland, generated from internal discussions between divisions within DECD (based on RMC reports on Maryland's economic conditions and economic development prospects) and further refined through commentary and evaluations by Technical Panel.

5. Economic Development Goals for Maryland: Background
   35 pages (in preparation)

   A collection of data, analyses, and questions which support goals presented in Economic Development Goals for Maryland.

#1 Action Development Planning
26 pages including appendices

A guide to the process of producing action oriented economic development plans at the county and regional level in Maryland.

#2 Population Growth and Public Expenditure
24 pages

Discusses the rationale of alternative assumptions about the demand for public services reflecting population size.

#3 Maryland Taxes and Revenues
19 pages

An exploration of public revenue patterns reflecting existing legislation.

#4 Toward a Planning Paradigm
10 pages

Establishes definitions for the concepts of goals, objectives, targets, and projects used by ODP, with supporting theorems and corollaries.

#5 Instituting a State Plan
6 pages

Explores the need for participation by all State agencies in the economic development planning process.

#6 A Survey of Economic Development Planning in the United States
15 pages

A description of ODP's survey of economic development planning efforts underway in other states.

#7 Some Elements of a Methodology for an Economic Development Plan
21 pages

Discusses various possible approaches to structuring an economic development plan and explores planning methodology and assumptions.

Occasional Papers (continued)

#6 Local Growth Policy: Economic and Legal Dimensions
74 pages including appendices

Describes the legal controversy surrounding the attempts of local government to limit population growth in their areas via a variety of land-use controls. The paper suggests a framework for an economic analysis of the problem.

#9 Maryland Fiscal Issues: A State Perspective
51 pages (in preparation)

Analyzes the tax and expenditure structure of the Maryland State Government and compares Maryland's fiscal effort with six other states. In view of this analysis and comparison several issues for economic development planning are raised.

MARYLAND DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF NATURAL RESOURCES
FLOOD RECOVERY, REHABILITATION
AND PREVENTION PROGRAM

Summary Final Report

The three tasks listed in the scope of services published in "Final Overall Program Design for Flood Recovery, Rehabilitation and Prevention", Maryland Department of State Planning, has been completed. A camera-ready copy of each of the three documents has been received and accepted by the Water Resources Administration. Copies of each document have been printed.

The three tasks are:

1. A report which will outline the recommended role of the Department of Natural Resources before, during and after natural disasters.
2. A draft of recommended regulations pursuant to Article 96A, Section 12 along with a report containing supporting information and bibliography.
3. A draft storm water management design manual along with supporting information.

The firm of Roy F. Weston, Inc. was hired to perform the consulting services. The choice of Roy F. Weston was based on the firms capability to do the job and on prior and concurrent performance of related studies with the Maryland-National Capital Park and Planning Commission.

The third task was the major job and involved the greatest effort. The manual is intended to provide a design technique

for mitigating the effects of development on flood flows. The intent is not necessarily flood prevention; however, the techniques given are suitable for design and analysis of small flood control projects.

The method given in the manual is the U.S. Soil Conservation Service method. The choice of this method was made for a number of practical reasons. First, there is the unique relationship between the Soil Conservation Districts and the Soil Conservation Service. Second, the soils information required for the method is available for the entire State. Finally, the method provides a hydrograph suitable for design and analysis of impounding structures.

An initial printing of 500 copies of the manual has been made. The manual will be disseminated to the local agencies for their consideration and adoption. There will be a continuing follow-up to provide training on the use of the manual. Additional printing will be done as needed.

The report on task 1 has provided guidance to the Department on its role during flood emergencies. This report is timely because the State Civil Defense is currently replanning its disaster planning program. As this planning effort continues, the Weston report will continue to serve as a guide to the role of the Department of Natural Resources.

This report includes a management and assistance plan to provide for an efficient response by the Department and its supporting agencies. Duties and responsibilities of other departments and agencies were examined in this task and a coordination plan with these entities was formulated. Areas of study included, but were not limited to:

a. Development of framework for assessing emergency situations such as dam failure and other structural deterioration brought about by flood waters.

b. Examination of U.S. Weather Service functions as related to early storm warnings and flood forecastings.

c. Coordination of evacuation procedures with Federal, State, and particularly local agencies.

For task 2, the consultant was instructed to review a set of draft regulations from the point of view of the consulting engineer. The review of existing regulations and enforcement practices pursuant to Article 96A, Sect on 12 of the Annotated Code of Maryland was to:

a. Assure no property within the scope of the law will be developed in such a manner as to create new damageable property.

b. Assure nc dam will be built which will create an undue hazard to downstream life or property.

c. Assure no other waterway obstruction or flood plain encroachment will create an additional flood hazard to other properties or adversely affect existing stream channel geometry.

d. Review the fifty-year flood restriction in light of Federal policies and their use of the one hundred-year flood.

However, the response to this task was somewhat surprising because the kind of recommendations made were not anticipated. The major feature of the report was the recommendation that a policy-design manual be drafted which would guide the engineer to acceptable procedures rather than providing burdensome detail in the regulations.

In summary, the Department is pleased with products of the contract. All three documents are of real and significant use to the Department.

Robert S. Norton, Jr.

SUSQUEHANNA RIVER BASIN COMMISSION

FLOOD PLAIN DELINEATION STUDY
FOR
THE SUSQUEHANNA RIVER FROM THE CONOWINGO DAM
TO THE MOUTH OF DEER CREEK
AND
A SECTION OF OCTORARO CREEK
LOCATED IN
HARFORD AND CECIL COUNTIES, MARYLAND

STUDY AUTHORIZATION

This Flood Plain Delineation Study was prepared at the request of the State of Maryland, Department of State Planning. The study was conducted and financed through Contract No. FDPG-09 between the Maryland Department of State Planning and Susquehanna River Basin Commission (S.R.B.C.).

COORDINATION ACTIVITIES AND CONTACTS

Cecil County Planning Commission and Harford County Department of Planning and Zoning staff personnel were contacted for information on history of flooding problems, land use controls and anticipated development within the study area. Hydrologic data were obtained from the Corps of Engineers (C.O.E.), the U.S. Geological Survey (U.S.G.S.) and the Philadelphia Electric Company. Tidal information was obtained from the National Ocean Survey.

DESCRIPTION OF STUDY AREA

The study area includes the flood plain areas along the Susquehanna River beginning at the confluence of Deer Creek and the Susquehanna River and extending upriver to the base of the Conowingo Dam. Also included in the study area are the flood plain areas of Octoraro Creek beginning at the confluence of Octoraro Creek with the Susquehanna River and extending upstream a distance of approximately one mile to the vicinity of Rowlandsville, Maryland. The flood plain areas along the Susquehanna River included in the study are located within unincorporated portions of Cecil and Harford Counties, whose common boundary is the channel of the Susquehanna River. The flood plain areas of Octoraro Creek included in the study are located within unincorporated areas of Cecil County.

This study includes detailed analysis of the sections of the Susquehanna River and Octoraro Creek included within the study area. This analysis utilizes hydraulic backwater calculations and provides the 10-, 50-, 100- and 500-year frequency flood profiles. Through this analysis the boundaries of the 100- and 500-year frequency flood plains are provided on maps prepared for the study. A 100-year

floodway was also determined for the study area.

FLOOD PROTECTION MEASURES

There are no local flood protection works existing or proposed within the study area. A number of flood detention dams upstream throughout the Susquehanna River Basin provide some degree of flood hazard reduction to the study area.

MAPPING SOURCES AND PROCEDURES

The base maps for this study were produced through stereo photogrammetric processing of new aerial photography flown in 1973. Base planimetric and topographic maps of the flood plain areas were produced at a scale of 1"= 200'. Orthophotographic maps also showing topographic information were produced at a scale of 1"= 200'. Topographic information is shown by five foot interval contour lines and spot elevations. The 1"= 800' scale maps accompanying this report were produced by photographically reducing the 1"= 200' scale base maps. All maps were field edited for correctness.

HYDROLOGIC STUDIES

Flood discharges and profile starting elevations were determined by the S.R.B.C.

The discharges for the Susquehanna River were obtained from the discharge frequency curves for the stream gages at Sunbury and Harrisburg, as published by the C.O.E. Discharge values for 10-, 50-, 100- and 500-year return periods at the two gaging stations were plotted against drainage area on log-log paper. Appropriate discharge values for the Susquehanna River at its mouth were obtained from this plot by extrapolating to the appropriate drainage area.

The discharges for Octoraro Creek were obtained from analysis of the data for the Octoraro Creek stream gage at Rising Sun, Maryland. This data was analyzed using the log-Pearson Type III method with historical data included, as recommended by the Water Resources Council. These values were increased slightly to account for the difference in drainage area between the stream gage and the mouth.

The tidal data for the National Ocean Survey tide gage at Havre De Grace was analyzed in order to estimate frequency of tide heights and in order to determine the starting elevations

for the water surface profile computations in the Susquehanna River. Since the Havre De Grace tidal record is very short, it was necessary to extend the record by cross correlation with the tide gage at Baltimore. The result was a mathematical model which uses the Baltimore data to estimate tide heights at Havre de Grace. The annual series of maximum tide heights obtained from this mathematical model was analyzed by the log-Pearson Type III method which fit this generated data exceedingly well. The tide heights corresponding to historical peak flows on the Susquehanna River were also determined from the model and this information was used to obtain starting elevations for the backwater calculations.

Peak discharge values are shown in Table 1.

HYDRAULIC COMPUTATIONS

The flood profiles were calculated using the C.O.E. HEC2 water surface profiles computer program.

Cross sections were located at regular intervals along the stream length and at significant changes in ground relief and land use or land cover. A total of 12 cross sections were used to analyze the Susquehanna River and 19 cross sections were used to analyze Octoraro Creek through the study reach. Ground elevations for the cross sections were photogrammetrically obtained as the 1"= 200' scale base maps were compiled. The channel bottom elevations for the Susquehanna River were obtained from existing profiles. The channel bottom elevations for Octoraro Creek were taken from field surveys.

The backwater computations for the Susquehanna River were started using elevations obtained from analysis of tidal data at the first river section located 5.7 miles downstream from the beginning at the study reach.

Reach lengths for the channel were measured along the center line of channel between sections as scaled from the 1"= 200' scale mapping or stream bottom profiles. The overbank reach lengths were scaled from the 1"= 200' scale mapping measured along the approximate center line of effective area.

Manning's "n" was evaluated from aerial and ground level photographs, topographic maps and on-site field examinations. The "n" value was selected from tables published by Ven Te Chow based on channel conditions and overbank vegetation or

land use. Within the study area the channel "n" value ranged from 0.030 to 0.060 and the overbank "n" ranged between 0.060 and 0.075.

The hydraulic model was tested and the "n" values adjusted within an acceptable range to best fit known highwater marks and/or elevations at gaging stations for the Susquehanna River from the mouth to Conowingo Dam. All gaging station elevations were determined by S.R.B.C. based on established rating curves. Highwater marks obtained by U.S. Geological Survey for the June 1972 flood were used. The 1972 flood has a recurrence interval of approximatley 500 years.

Differences between the rating curve for the U.S.G.S. gage at Conowingo Dam and the tailwater rating for the dam as prepared by the power company exist. These differences could not be resolved in a timely manner. Therefore, the elevations resulting from the backwater profile calculations produced by SRBC for this report, which do not vary greatly from the elevations obtained from either previously established rating curve, are felt to be valid.

When a satisfactory model was achieved, the water surface profiles were computed for floods with recurrence intervals of 10, 50, 100, and 500 years.

The procedure for Octoraro Creek was essentially the same as described above except that it was not possible to verify the profile using known highwater marks. Channel "n" value was 0.040 and overbank "n" value was 0.075. Profiles for Octoraro Creek were started at critical depth at the mouth of the Octoraro Creek.

FLOODWAY DETERMINATIONS

A floodway is the channel of a river or other watercourse, and the adjacent land areas, required to carry and discharge the 100-year flood without increasing the water surface elevation at any point more than one foot above existing conditions and without producing hazardous velocities. The floodway indicates the portions of a flood plain which should remain unobstructed.

The area between the floodway and the boundary of the

100-year flood is the floodway fringe. Figure 1 illustrates the typical relationships between floodway and floodway fringe and their significance to flood plain development.

Floodways were determined for the stream reaches studied. Where possible, the method of equal conveyance reduction in each overbank was used. Encroachments did not go beyond the top of banks, even if the resultant rise in water surface was less than the allowable one foot.

Boundaries of the floodway, 100-year flood, and 500-year flood are shown on the 1"=200' and 1"=800' scale maps.

FILE DATA LOCATION

The basic data and computer output for this study will be filed at the office of the Susquehanna River Basin Commission, 5012 Lenker Street, Mechanicsburg, Pennsylvania 17055.

REFERENCES

-------Hydrologic Study Tropical Storm Agnes, Report No. 2, North Atlantic Division, Corps of Engineers, New York, New York, October 1972.

-------Hydrologic Study Tropical Storm Agnes, (draft) North Atlantic Division, Corps of Engineers, New York, New York, November 1973.

-------Uniform Technique For Determining Flood Flow Frequencies (draft) U.S. Water Resources Council December 3, 1974.

Chow, V. T., Open Channel Hydraulics, New York, New York, McGraw Hill Book Company, 1959.

TABLE 1

PEAK DISCHARGE VALUES

	Peak Discharge Frequency, cfs			
	10 Yr.	50 Yr.	100 Yr.	500 Yr.
Susquehanna River	460,000	680,000	780,000	1,200,000
Octoraro Creek	18,600	37,800	47,900	79,900

TYPICAL FLOODWAY AND FLOODWAY FRINGE

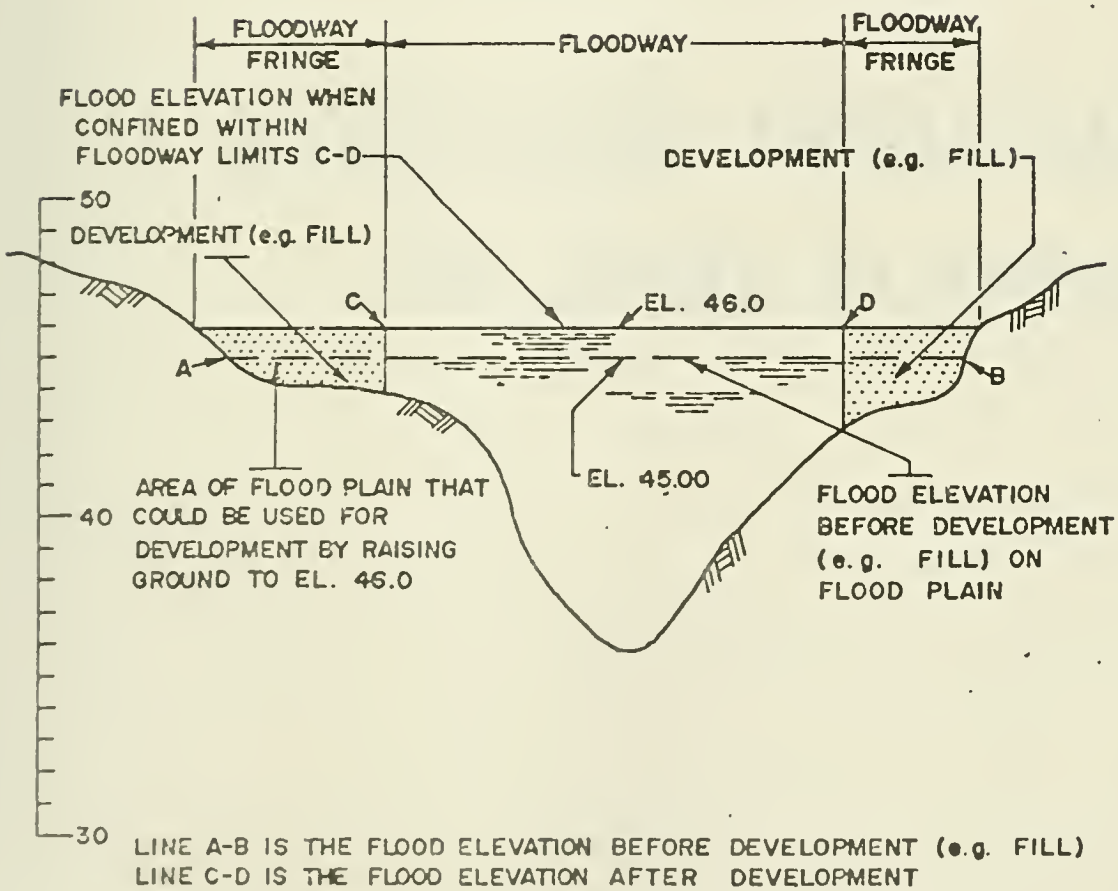

FIGURE 1

MARYLAND DEPARTMENT OF STATE PLANNING

COMPREHENSIVE PLANNING DIVISION

demands of those uses upon the land are understood. It is this fact which forms the rationale for employing soils information in a planning context. The soil scientist supplies the planner with a typology which can be translated to meet planning objectives, just as he provided information suitable for crop farming and other uses. Two examples of grouping soil types by general characteristics, are the productivity classification and land capability classification systems.

Though it is true that most land which can be farmed can also sustain homes and industries, for obvious reasons one would not wish to convert all farmland into urban land. Therefore, it would seem useful to find some means to use the soils data to help planners indicate those areas best suited for each land use.

Soils information has found greatest use at the Conservation District level. Hence, publications were produced for district units and mapping scales were set accordingly. Planning agencies which have larger or smaller spheres of responsibility have been at a disadvantage when using this detailed material. If sub-district information has been necessary, detailing and/or segmentalization could be easily accomplished; at a state level, however, detailing would be excessive. If a technical solution to this problem were to be devised, it would ne a simple matter to construct an appropriate conversion system for the basic typology. With the assistance of the Soil Conservation Service, a suitable classification system was produced; namely Natural Soil Groups.

In general, the Natural Soil groups are arranged in order of increasing limitations or problems for most uses. Drainage class or wetness characteristics is one of the prime considerations. Thus, the better drained soils are the first groups. Groups are divided on the basis of drainage class, depth,

permeability, flooding, stoniness and rockiness. Subgroups are divided only on the basis of slope steepness, where this is an important feature affecting use.

Only soil series names and land types are shown in the system. However, soil mapping units are placed in the system by slope phase if subgroups are listed for the soil series and group. If an asterisk appears beside the soil series name, this indicates that all stony or rocky mapping units of that soil series are automatically in Group H1, if stony, or Group H2, if rocky.

Soils on floodplains are divided into two groups. Group G1 consists of the better drained alluvial soils, and Group G2 the wetter alluvial soils. Although both groups are subject to flooding, Group G1 has a generally greater potential for high yields of farm crops and is more adaptable for some nonfarm uses, such as parks and play areas.

It must be realized that groupings, such as these, force generalizations on specific soils. Thus, any interpretation for a group cannot be as accurate as an interpretation for a specific soil in the group. On the other hand, the groupings are accurate enough for preparing generalized maps showing soil groups with properties nearly alike and for preparing generalized soil interpretive maps. The maps themselves have been prepared by using existing soil survey and mapping units, wiping out unnecessary detail by overlooking small areas, and delineating Natural Soil Groups as the interpretive units on the existing mapping units.

The detailed soil survey maps are intended to serve the needs of people having many different problems and disciplines. Information of a more general nature is usually requested and the soil types are grouped in various ways according to the specific objectives of the user. Thus, the detailed soil survey maps serve as the base from which many groupings can be made such as

COMPLETION REPORT:

FDCO Program Activities

It is worthwhile to note that a wide range of program oriented activities were undertaken by FDCO in addition to those activities noted earlier in the Program Summary section. These activities were necessary to achieve the goal of overall flood planning coordination.

In June 1973, FDCO had tendered contracts to HUD, EDA and ARC. The contracts were handled similar to HUD's 701 contracts. Each jurisdiction submitted progress reports and, if appropriate, documentation of matching services. The FDCO monitored each contract. If the jurisdictions utilized consultants in their programs, the Department of State Planning entered into such contracts on behalf of the jurisdiction and FDCO monitored the work of the consultants in cooperation with the jurisdictions.

In April of 1973, a FDCO Program Coordination Committee meeting was held. The Committee was composed of agencies receiving "Agnes" funds. Status of the funds was discussed along with contractual terms and necessary steps before final execution of the contracts. The role of FDCO in the flood recovery effort was reviewed. It was stressed that FDCO's function is that of coordination including (1) documentation of activities that have and will take place; (2) identification of those responsible for the activities; (3) identification of methods to avoid duplication of effort; (4) technical guidance and assistance; and (5) dissemination of information to those involved in the above areas.

FDCO outlined the status of its efforts to identify the types of floodplain or flood related studies planned or underway within the State. It was pointed out that FDCO would closely cooperate with the Department of Natural Resources

in this effort. A third area discussed was the need for uniform urban storm drainage criteria in the State. A program seemed to be needed on a regional if not State level for collecting and analyzing storm runoff and flood data.

Under Section 206 of PL 91-606, the President was authorized to make grants of not more than $250,000 to any state not to exceed 50 percent of the cost of comprehensive plans and practical programs against major disasters and for relief and assistance of local government following such disasters. The Federal Disaster Assistance Administration (FDAA), formerly OEP, was responsible for administering this grant program and noted that such plans may include long range recovery.

The Office of Civil Defense and Emergency Planning received a grant from FDAA to prepare a new Maryland disaster plan. One segment of this plan included long range recovery which the Department of State Planning was responsible for preparing. At the suggestion of the Office of Civil Defense and Emergency Planning, the Department of State Planning through FDCO contacted local county officials to see if they would be interested in applying for 50% grant funds for local disaster planning. A number of counties stated they were interested and began preparing work programs in November of 1973.

Local programs were coordinated by FDCO and together represented the long range recovery segment of the State plan, then in preparation by the Office of Civil Defense and Emergency Planning. That long range recovery program was submitted to FDAA for funding as an amendment of the original grant to the Office of Civil Defense and Emergency Planning.

In April 1974, FDCO received approval from Federal agencies to re-allocate Hurricane Agnes flood recovery monies to fund a joint Floodplain and Stormwater Management Study of the Jones Falls Watershed. This marked the first large

scale study of its kind to be undertaken cooperatively by Baltimore City and Baltimore County.

In June of 1975, FDCO produced a list which provided information on the identity of those communities that have been notitied by the Flood Insurance Administration as having one or more areas of special flood hazard. The list gave the date that the community was notified of special flood hazard areas and either the date on which the jurisdiction entered the flood insurance program or the date by which the jurisdiction must enter the flood insurance program or lose Federally related financial assistance for acquisition or construction in identified special flood hazard areas.

By June of 1975, a number of small municipalities still had not enacted comprehensive land use planning and regulatory measures under Article 66B of the Annotated Code of Maryland. That is to say that they had not enacted subdivision or zoning regulations. Many of these municipalities were seeking eligibility within the Federal flood insurance program which required as a prerequisite that they enact regulations to restrict harmful development within flood-prone areas. Secretary Wahbe requested an opinion of the Attorney General as to whether these municipalities may enact regulations under Article 23A of the Annotated Code of Maryland to control the construction of buildings and utilities within flood hazard areas without having to generate a general development plan required before zoning and subdivision regulations could be enacted.

Another coordinative activity in which the FDCO participated was connected with Joint Resolution No. 76. The General Assembly passed and the Governor approved House Joint Resolution No. 76 which requested the Departments of State Planning and Natural Resources to evaluate the present flood control and floodplain management activities within the State and to make recommen-

dations to the Assembly for legislative action to further develop the ability of the State to regulate hazardous flood related activities. Much of the necessary background material was generated through the work program of the Flood Disaster Coordination Office.

List of Reports and Papers

Below are listed, under the State agency or local subdivision responsible for preparation, reports and major papers funded by the Hurricane Agnes Recovery Grant to the State of Maryland.

Maryland Department of State Planning

1. "Overall Program Design for Flood Recovery, Rehabilitation and Prevention", October 1972.

This report describes the initial assessment of the State's long-range flood prevention planning needs following Hurricane Agnes. Program needs from State and local subdivisions are presented for funding. The report accompanied the request for long-range flood recovery funds and does not represent the programs as finally approved by the Federal funding agencies.

2. "Final Overall Program Design for Flood Recovery, Rehavilitation and Prevention", June 1974 (Publication No. 219).

In March 1973, the Federal Regional Council approved an abbreviated $\frac{1}{2}$ million dollar program or about 15% of that requested. This program is represented in the Final (Funded) Overall Program Design. Since the execution of the Program in the summer of 1973, changes had occurred as a result of local government reallocation of resources to better reflect the actual needs which became clearer as the individual programs got underway. This document reflects these and other minor changes and presents the Program as it was completed in December 1975.

3. "Summary of Flood Related Studies in Maryland", July 1973 (Publication No. 194); Updated, June 1974 (Publication No. 210).

Describes activities of Federal and State agencies involved in floodplain and stormwater management. It also discusses the impact of the Flood Disaster Protection Act on State and Local agencies and individuals. Report lists the status of all major studies and investigations of flooding problems in Maryland.

4. "Regulation of Flood-Prone Land in Maryland", May 1975 (Publication No. 220)

A review of floodplain and stormwater management programs in Baltimore City and the twenty-three counties of Maryland. Program information was gathered from personal interviews, related correspondence and research. Management practices center on zoning, subdivision regulations and building codes. The report ends with a discussion of judicial reaction to floodplain and stormwater management practices.

5. "FDCO Newsletter", Published seven times between 1973 and 1975

Newsletter was published by the Flood Disaster Coordination Office and sent to all Federal, State and local governments and interested elected officials and private citizens to inform them of the status of the funded program, flood related legislation, the Federal Flood Insurance Program, and related matters.

6. "Natural Soil Groups of Maryland", December 1973 (Publication No. 199).

The manual was compiled with the extensive assistance of the U.S. Department of Agriculture Soil Conservation Service. This manual has been designed as an interpretative guide to the soil maps. Both the maps and this guide must be used together; otherwise, the utility of the information will be substantially reduced. One need fully understand the parameters of the data collection and the data manipulation process described if he is to properly use the maps connected with this publication. The Natural Soil Group maps and Soil Conservation Service detailed Soil Surveys and supporting texts are highly useful resources for land planning. And their utility should not be compromised by improper use. The remainder of the report is divided into sections which detail specific aspects of the project. They can be used independently or in concert with each other.

7. "Report to the Maryland General Assembly on Flood Control and Floodplain Management Activities"

In response to a joint request from both houses of the 1975 Maryland General Assembly, the State Departments of Planning and Natural Resources are preparing a report on flood control activities at all levels of government. The report will review and evaluate all Federal, State and local activities and suggest legislation to clarify the State's policy with regard to its flooded lands and recommend a program to provide adequate protection of flood-prone property.

Baltimore City and Baltimore County

"Final Report - Jones Falls Watershed Management Study", June 1975

This report reviews the history of flooding in the Jones Falls Watershed, reviews past attempts at reducing flood damages, determines specific flood control needs, and offers a management program outline for implementation by Baltimore City and Baltimore County. The program establishes the framework for interjurisdictional joint watershed planning and management. The management alternatives offered include land use controls, floodplain management regulations, stream maintenance, floodproofing, stormwater management techniques, and the concept of a regional flood control authority.

The report was prepared by Roy F. Weston, Inc., West Chester, Pennsylvania, consultant to Baltimore County and Baltimore City.

Cecil County

"Comprehensive Flood Recovery and Prevention Planning Study for the Town of Port Deposit, Maryland", June 1974

This study determines methods necessary to eliminate or minimize future flood hazard, provides alternatives for development in the Town's floodplain and upnill areas and evaluates real estate and economic potentials. The report analyzes (1) background data concerning Port Deposit's immediate subregion to give a broader perspective to the Study; and (2) existing conditions within the Town to determine limitations to future development. Over 1/3 of the Town's land area has a slope of 25% or greater. Annexation is discussed because there are only 95 acres of buildable land remaining for future development within Port Deposit. The report suggests that flood recovery is not the Town's greatest

problem. More important is loss of jobs and economic base due to the closing of Bainbridge and the need to install flood prevention measures to guard against future disasters.

This report was prepared by Edward H. Richardson Associates, Inc., Newark, Delaware, consultant tc Cecil County.

Howard County

A report on "Allview Estates - Elkridge Interim Flood Plain Study", July 1974.

Extensive flooding of the communities of Allview Estates and Elkridge in Howard County during Tropical Storm Agnes in 1973 generated an awareness among the residents and county officials of the probable effect of continued development of the upstream watersheds in increasing the flood damage and hazard from storms of lesser intensity but greater frequency. This report evaluates the predicted rate of development and resultant level of flooding due to the 100-year frequency interval storm at several intervals of time. Alternative measures for eliminating damage predicted due to the 100-year frequency interval storm are evaluated in conjunction with flood prevention measures planned by the Soil Conservation Service and the Corps of Engineers to determine and recommend feasible methods of flood damage prevention with the best benefit to cost ratio.

This report was prepared by Dalton-Dalton-Little-Newport, Baltimore, Maryland, consultant to Howard County.

Maryland-National Capital Park and Planning Commission

"A Comprehensive Stormwater Management Program for the Anacostia River Basin in Prince George's and Montgomery Counties, Maryland", December 1975.

The Maryland-National Capital Park and Planning Commission (MNCPPC) has recognized the potential for flood damage in Prince George's and Montgomery Counties as a result of continued development and, by undertaking a comprehensive stormwater management program, is seeking to protect the counties from such damage. The four prime objectives for the Comprehensive Stormwater Managment Program were: (1) to ascertain the extent of stormwater problems at the present time; (2) to predict future problems in the Anacostia River Basin as urbanization continues; (3) to study alternative techniques in solving local stormwate problems; and (4) to make the legal, engineering, and administrative arrangements necessary to implement a program for minimizing the cost of stormwater damage to the environment, the community and the individual taxpayer.

This report was prepared by Roy F. Weston, Inc., West Chester, Pennsylvania, consultant to the Maryland-National Capital Park and Planning Commission.

Tri-County Council for Western Maryland, Inc.

"Slide Narrative on the National Flood Insurance Program", 1975

A slide presentation was put together by the Flood Management Coordinator for the Tri-County Council for Western Maryland, Inc. to educate local government officials

and citizens concerning the potential damage which can result from the occupation of flood-prone lands and the requirements of the National Flood Insurance Program which provides subsidized flood insurance to the occupants of flood-prone land.

Department of Economic and Community Development

See pages 139 through 141 for a list of this Agency's publications.

Department of Natural Resources

1. "Regulation Review Report" (State Regulatory Programs Affecting Stormwater Management in Maryland), February 1975.

This report, for internal use of the Department of Natural Resources (DNR), represents a review of regulations and enforcement practices administed by DNR through the water resources and sediment control programs of the State. The purpose of this review is to establish whether or not the existing regulations as currently enforced are adequate to assure that no undue flood hazard or risk to life and property will be created by property development, dam construction, waterway obstruction, and floodplain encroachment affecting "waters of the State." In addition to the overview evaluation of the program effectiveness, the report comments on certain specific items within the regulations. These comments for the most part suggest minor revisions thought to clarify certain defin and meanings.

2. "Flood Emergency Assistance Report", January 1975

This report outlines the recommended role of the Maryland Department of Natural Resources before, during and after floods. The report identifies the need for specific flood assistance activities and outlines the role of DNR in conducting such activities. Current flood response activities are summarized to provide a perspective of the status of flood emergency planning in Maryland. The report also relates to flood emergency response activities at the Federal and local levels as applicable to Maryland.

3. "Stormwater Management Design: A Manual of Procedures and Guidelines", February 1975.

This manual represents a compilation of state of the art concepts and current practices relevant to stormwater management in the State of Maryland. The manual clearly states program objectives and presents background materials pertaining to stormwater management principles in general. The major portion of the manual is devoted to a presentation of uniform guidelines and procedures concerning specific techniques of predicting runoff flows and the application of control criteria. The technique of on-site detention receives major emphasis as it represents the most widespread current application of such controls.

The text of the manual is supplemented by extensive criteria tables, design charts, nomographs and other technical aids in appendix form. The manual is intended to be sufficient for complete conceptual design of runoff control structures. Specific topics addressed include site evaluation, hydrologic analysis, hydraulic routing, facility design, and institutional arrangements.

All of the above reports were prepared by Roy F. Weston, Inc., West Chester Pennsylvania, consultant to the Department of Natural Resources.

Susquehanna River Basin Commission

"Floodplain Delineation Study for the Susquehanna River from the Conowingo to the Mouth of Deer Creek and a Section of Octoraro Creek", February 1975.

This report describes the methodology for delineation of floods with 10-, 50-, 100-, and 500-year recurrence intervals. The flood elevations are shown on accompanying maps.

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